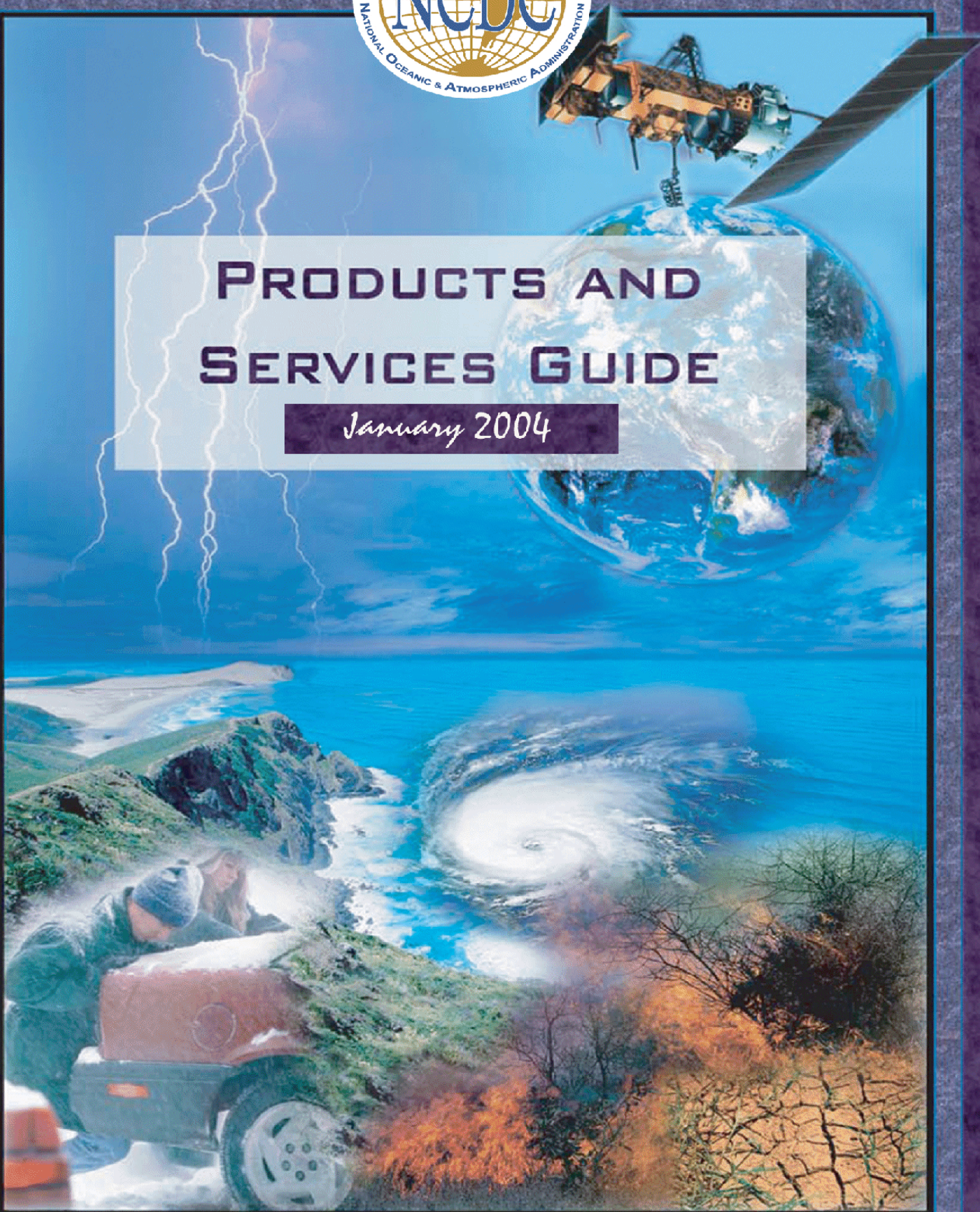


PRODUCTS AND SERVICES GUIDE

January 2004



NCDC Home Page: www.ncdc.noaa.gov

PRODUCTS AND SERVICES GUIDE

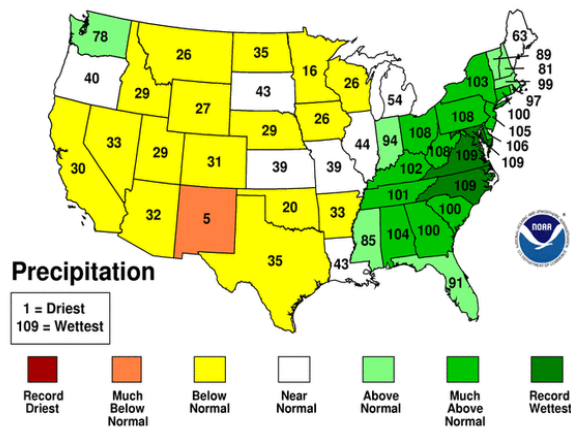
NATIONAL CLIMATIC DATA CENTER

ASHEVILLE, NC



2003 *Annual Statewide Ranks

National Climatic Data Center/NESDIS/NOAA



January 2004

Neal Lott
Tom Ross
Axel Graumann
John Kobar

See <http://www.ncdc.noaa.gov/ol/climate/climateproducts.html> for a digital copy of this guide.

A message from the Director, National Climatic Data Center

The National Climatic Data Center offers a wide range of products and services. Our users range from large engineering firms designing the latest in safe energy efficient structures, to the attorney documenting a weather event, to the individual planning for a retirement move.

Services offered include data resource consultations, subscription items and publications, copies of original records, certifications, generation of specialized climate studies, and a host of other climate-related activities. Services are delivered on a variety of media including on-line access, CD-ROMs, magnetic tape, floppy disks, computer tabulations, maps, and publications.

Tom Karl
Director

About the National Climatic Data Center

The National Oceanic and Atmospheric Administration (NOAA) Data Centers (of which NCDC is the largest) are world-class centers that provide long-term preservation, management, and ready accessibility to environmental data. The combined archive includes records taken even before Ben Franklin's weather observations and continues with the latest real-time satellite imagery. The Centers are part of the National Environmental Satellite, Data and Information Service (NESDIS). The NCDC is located in Asheville, NC .

NCDC Mission Statement

NCDC's mission is to manage the Nation's resource of global climatological in situ and remotely sensed data and information to promote global environmental stewardship; to describe, monitor and assess the climate; and to support efforts to predict changes in the Earth's environment. This effort requires the acquisition, quality control, processing, summarization, dissemination, and preservation of a vast array of climatological data generated by the national and international meteorological services.

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NCDC 2003 HIGHLIGHTS

Conferences, Papers, and Outreach

Assessment of Urban Vs Rural Temperatures

DOC's National Oceanic and Atmospheric Administration's (NOAA) National Climatic Data Center Meteorologist, Dr. Thomas Peterson, is author of an article entitled, "Assessment of Urban Versus Rural In Situ Surface Temperatures in the Contiguous United States: No Difference Found," which appeared in the September 15, 2003, issue of Journal of Climate. The study revealed that stations located in urban areas were found to be no warmer than nearby rural stations, contradicting the commonly accepted opinion that the effects of urbanization creates a warm bias in many temperature records. Although urban heat islands certainly exist, NOAA's National Weather Service generally does not locate in situ stations in locations that are likely warmer than nearby rural areas such as industrial sections of towns or at major highway intersections. The in situ stations are more likely to be in "park cool islands." Therefore, this study concluded the in situ climate record is better than many people might think.

Reconciling Vertical Temperature Trends Workshop

Reconciling Vertical Temperature Trends: A Reconciling Vertical Temperature Trends workshop was held at DOC's National Oceanic and Atmospheric Administration's National Climatic Data Center on October 27-29, 2003. The workshop was held in anticipation of producing a report for the U.S. Climate Change Science Program and was coordinated internationally with a newly constituted Global Climate Observing System/Atmospheric Observations Panel for Climate Working Group on Reconciling Vertical Temperature Trends. Specifically, the workshop was designed to: 1) Assess the state of the science in the measurement of temperature from space, weather balloons, and from surface instrumentation; 2) assess whether any unresolved differences in the trends are consistent or inconsistent with present understanding of anthropogenic or natural climate forcing (e.g. model simulations); and 3) define the measurements, analyses, or other actions required to reduce uncertainties. There were approximately 50 scientists who participated in the workshop. More information along with presentations are available: <http://www.ncdc.noaa.gov/oa/rvtt.html>

Canada/U.S. Bi-lateral Meeting

NCDC hosted a Canadian/U.S. Bi-lateral meeting in Asheville, North Carolina, April 30 - May 1, 2003. Issues of mutual interest to both Environment Canada and NCDC were discussed including: the U.S. Climate Reference Network and the Canadian Climate Station Initiative; monitoring observing system performance; data management and data rescue issues/efforts; and global data exchange and access.

North American Drought Monitor (NADM) Workshop

NOAA's National Climatic Data Center hosted the NADM Workshop in Asheville, North Carolina, June 25-27, 2003, with participation from Canada, Mexico, and the U.S. The NADM is the first step in establishing a near-real time climate extremes monitoring system and assessment of trends as a partnership between the three countries. A target of the meeting included the goal of producing a comprehensive assessment of long-term variability and trends in North American climate extremes by 2005. This year's NADM workshop addressed two broad issues: technical and user issues directly related to the NADM, and issues relevant to the creation of a monitoring system for climate extremes in addition to drought.

American Society of Civil Engineers (ASCE) Meeting

NCDC's Neal Lott attended a meeting of the ASCE ice loads committee in Montreal, Canada, September 15-16, 2003. The purpose of the meeting was ongoing work to expand and refine a climatology of ice weight and thickness extremes for use in engineering standards, along with drafting of maps and a narrative for the next revision of the ASCE publication. The new standards and climatology created by this committee are already being used extensively in the design of towers, cables, and other structures that accrete ice, by utilities, communications, and many industries in their engineering design standards. The meeting involved scientists and engineers from the US and Canada. Mr. Lott is one of the U.S. members of this committee.

NESDIS Data Users Workshop Summary

By all accounts, the June 11-12 NESDIS Data Users Workshop held in Boulder, CO was highly successful. The Workshop opened with an informal icebreaker on June 10 which set the congenial tone for the remainder of the workshop. There were 223 registered guests present. Approximately 150 additional non-registered participants attended the morning session of the first day resulting an estimated 375 attendees. Vice Admiral Conrad Lautenbacher delivered the keynote address supplying a summary of overall plans by NOAA, and Greg Withee delivered a similar summary of NESDIS planning. Brief summaries of plans for each of the four primary data centers were then presented by the directors. In addition, Data Center exhibits and a poster session was presented. The afternoon session was reserved for panel discussions by invited speakers from the commercial, research-academia, and government sectors. Special invited speakers included Ron MacPherson and Joe Friday as the dinner speaker. The second day of the workshop had six constituent breakout groups which resulted in a substantial number of recommendations by the participants. NESDIS is developing a plan of action for each recommendation, and a summary report of the workshop was completed. Additional information, pictures taken during the workshop, and copies of presentations can be found on the workshop web site at: <http://www.osd.noaa.gov/datausers/index.htm>

NESDIS Customer Survey Process Completed

The NESDIS customer survey was completed, with well over 6000 customers completing the survey, a response rate of over 25%. Many of the surveys were completed online by customers,

using the web system developed by NCDC, while approximately 1/3 were mailed on paper forms and then key-entered. The results for customer satisfaction were encouraging, and the results were presented at the NESDIS Data Users' Workshop in June in Boulder.

Web Design Conference

NCDC held a Web Design Conference on November 6-7, 2003. The conference, chaired by the NCDC Web Committee, covered a number of topics including cascading style sheets, XML, ArcIMS, Oracle database access, the redesign of NCDC's upper-level web pages, elements of good web design, suggestions from the NESDIS Users Conference, and metadata requirements. All NCDC personnel involved in web page development and data access via the web attended. The conference resulted in a number of action items for the Web Committee, and valuable feedback for the upcoming new web site for NCDC.

NCDC Collaboration with Department of Defense (DoD)

In response to a Congressional inquiry, NCDC completed a 14-point review of current NCDC collaboration with DoD. NCDC, as part of the Federal Climate Complex (FCC) with the Air Force and Navy, is involved in numerous areas of cooperation, cost-sharing, collaboration on projects, and direct support of military requirements. This includes usage of NCDC datasets in climatological studies for the Middle East and other areas, FCC working groups (such as one for Geographic Information Systems), joint training activities to allow for more on-site employee training, an NCDC web page with data summaries for the Middle East, a global gridded precipitation climatology prepared for the US Army, and many others.

Largest Hailstone

The National Extremes Committee, led by DOC's National Oceanic and Atmospheric Administration's National Climatic Data Center, has certified a new record for the largest hailstone ever collected and measured in the United States. On June 22, 2003, a hailstone that fell in Aurora, Nebraska, was collected and measured to have a diameter of 7 inches and a circumference of 18 3/4 inches. This hailstone was larger than the previous record large hailstone that fell in Coffeyville, Kansas, in 1970 (5.7 in./17.5 in.). An accurate weight could not be determined for the Aurora hailstone, therefore the Coffeyville hailstone of 1970 remains the heaviest hailstone weighed and verified in the United States at 1.67 pounds.

2002 Annual Report

In this report, you will see a brief description of NCDC today, our efforts in partnership building, a description of newly developed products, and a brief enumeration of the Center's future plans. The 2003 annual report will be available in early 2004. The URL is:
<http://www.ncdc.noaa.gov/oa/about/ncdc2002report.pdf>

Data, Information Access, and New Products

GOES Data Online

Recent and current GOES data are available for ordering online in the Comprehensive Large Array-data Stewardship System (CLASS). CLASS is NOAA's premiere facility for the distribution of NOAA and U.S. Department of Defense (DoD) data. The data can be ordered for FTP delivery within 24 hours using the web interface. Users can order GOES data by satellite id, geographic region, date, and/or time. Users can select from several output formats including McIDAS, NetCDF, GIF and JPEG. Users can also preview a representative image before ordering the data. The URL is: <http://www.class.noaa.gov>

Serial Publications Online Access System

NCDC placed on line a new system to provide easy access to recent and historical serial publications. The first publication offered through this system is the Climatological Data (CD) publication, by state. Previously, online subscribers were able to access this publication back to October 1997. Now through the Climate Data Modernization Program (CDMP), all of the CD publications for the entire publication history (back to the 1890's) have been scanned and are available online. Over the next few months, each of the remaining serial publications (Hourly Precipitation Data, Storm Data, Monthly Climatic Data for the World, Local Climatological Data) will be added to this system. This will provide one easy access point for all of our serial publications. The URL is: <http://www7.ncdc.noaa.gov/SerialPublications/>

Pre-1948 U.S. Daily Data Now Online

NCDC has completed the loading of pre-1948 U.S. daily cooperative station data (from DSI 3206) into the Climate Data Online (CDO) system, and the digital data are now accessible on-line. These data were keyed from forms and then converted to the "standard" daily format through the Climate Data Modernization Program. This extends the period of record back in time for numerous stations which previously had on-line data only back to 1948. Some of the sites now have on-line data back into the 1800's. The URL is: <http://cdo.ncdc.noaa.gov/CDO/cdo>

Global Surface Hourly Data Now Online

The 2003 portion of the Integrated Surface Hourly (ISH) Version 2.1 global database is now online in the Climate Data Online (CDO) system. As with other CDO datasets, the user can select data by region, country, state, station, and time series, or via a map interface. Approximately 10,000 ISH stations are currently active worldwide. The system will be operationally updated with the most recent data, and will also be populated with pre-2003 data until the full archive is online. The data are available as a space-delimited web form which includes the key elements; or the user may select just the elements of choice, in which case the data documentation is restricted to the elements chosen for ease of use. The URL is: <http://cdo.ncdc.noaa.gov/CDO/cdo>

New Version of Climate Data Online (CDO) System

NCDC has placed online a new/enhanced version of its CDO web system. The new features include: a) a map services (GIS-based) interface to the data; b) a station name query, allowing users to enter a station name and see what data are available; and c) an enhanced "user help" system. The system provides access to the following datasets:

- Global monthly surface data (from CLIMAT bulletins)
- Global hourly surface data (from Integrated Surface Hourly)
- Global Climate Observing System (GCOS) monthly data
- US hourly precipitation data
- US 15-minute precipitation data
- US annual climatological summaries
- US daily surface data
- US monthly surface data

The URL is: <http://cdo.ncdc.noaa.gov>

Hurricane Isabel Landfall Poster

NOAA's Polar-orbiting Operational Environmental Satellite, NOAA-17, captured historic Hurricane Isabel shortly before making landfall along the North Carolina Outer Banks on September 18, 2003. The URL is:

<http://ols.nndc.noaa.gov/plolstore/plsql/olstore.prodspecific?prodnum=C00578-POS-A0001>

National Climatic Data Center Quarterly Record Set for Data Downloaded

For the fourth quarter of FY 03, approximately 2.1 terabytes of data were downloaded via NCDC's web site, a new record for any quarter. This continues a steady upward trend in data and products provided online via the web at NCDC.

Integrated Surface Hourly (ISH) Observations CDROM Set

The 2002 global surface hourly CDROM series (4 volume set) was released for the Integrated Surface Hourly database. Hourly and synoptic data for approximately 10,000 global stations are available for 2002. 2001 is also available as a separate set, along with the original set containing the years 1995-2000. The URL is: <http://ols.nndc.noaa.gov/ish.html>

Hourly Precipitation Data Rainfall Event Statistics Online

A new NCDC web system is now online that provides free access to hourly precipitation rainfall event statistics. The system provides access to 26 different statistical measures derived from hourly precipitation data from approximately 1948 to 1999, for more than 4800 cooperative weather stations in the United States. Users of the system select a station and desired period of record (POR), and can view both year/month statistical values and summarized values over the entire selected POR. One application of these data is to serve as a source of reference for storm events, and in determining necessary data for the U.S. EPA Storm Water Permitting Program.

The URL is: <http://www.nndc.noaa.gov/cgi-bin/HPD/HPDStats.pl>

Continental U.S. Landfalling Hurricanes - 1950 - 2002

There were 87 continental U.S. landfalling hurricanes for the period 1950 to 2002. This 36" x 27" glossy poster graphically displays the name, year, and landfall location of each hurricane, as well as, depicts the strength of each hurricane at time of landfall based on the Saffir-Simpson Hurricane Scale. The poster is available for purchase on DOC's National Oceanic and Atmospheric Administration's National Climatic Data Center's website, and is also available as a free pdf image file at: <http://www.ncdc.noaa.gov/oa/climate/severeweather/hurricanes.html>

New Paleohydrology Data Resource

Tree-Ring Reconstructions of Streamflow for Colorado is a new online data resource hosted by DOC's National Oceanic and Atmospheric Administration's (NOAA) National Climatic Data Center (NCDC). The website, <http://www.ncdc.noaa.gov/paleo/streamflow>, contains a dataset of 15 annual streamflow reconstructions for the Upper Colorado and South Platte River basins, along with the gage records, interpretive information on the reconstructions, and links to other resources. The goal of the project is to develop new hydroclimatic reconstructions and improve their utility to water resource managers. Reconstructions have been generated in partnership with major Colorado water providers including the Denver Water and Northern Colorado Water Conservancy District. This project has been funded by NOAA's Office of Global Programs and NOAA/Cooperative Institute for Research in Environmental Sciences Western Water Assessment program.

U.S. Climate Reference Network (CRN)

The U.S. Climate Reference Network (CRN) is a network of climate stations now being developed as part of a National Oceanic and Atmospheric Administration (NOAA) initiative. The primary goal of its implementation is to provide future long-term homogeneous observations of temperature and precipitation that can be coupled to past long-term observations for the detection and attribution of present and future climate change. During 2003, the web site was upgraded and enhanced with new features:

<http://www.ncdc.noaa.gov/oa/climate/uscrn/index.html>

Alaska and Hawaii Climate Maps (CLIMAPS) Now Available On-line

The National Climatic Data Center's CLIMAPS web system has been updated to include over 1,200 new climate maps of Alaska and Hawaii. These full color maps are available for climatic elements such as temperature, precipitation, snow, wind, and pressure. The period of record for the majority of the maps is 1961-1990. The CLIMAPS system now provides on-line access for over 2,000 climate maps of the Continental United States, Alaska, and Hawaii. The maps are available in Adobe PDF and Environmental Systems Research Institute Shape file formats and can be found at: <http://www.nndc.noaa.gov/cgi-bin/climaps/climaps.pl>

Climatology for Southwest Asia

NOAA's National Climatic Data Center (NCDC) has released an upgraded web site for Southwest Asia. The web site includes much more climatic information for Iraq and allows for unrestricted distribution of the detailed station-by-station climatic summaries for the area. The Air Force Combat Climatology Center (AFCCC) and the U.S. Navy, co-located with NCDC, gave permission for unrestricted access to the summaries, which had been restricted to ".gov" and ".mil" users. The website is providing support for many customers, such as the news media, to obtain quick support on-line rather than having to contact NCDC, AFCCC, or the U.S. Navy by telephone. The URL is: <http://www.ncdc.noaa.gov/oa/climate/afghan/>

Upgraded Unedited Local Climatological Data (LCD) Online System

NCDC has placed online a new, upgraded version of its very popular unedited LCD system. The new system includes a map interface and a state list, thus allowing the user to first browse the stations available in each state. Also, the new system includes Automated Weather Observing System (AWOS) stations, in addition to the Automated Surface Observing System (ASOS) sites which have always been available, thus bringing the total number of stations online to over 1500. Both hourly and daily summary data are provided for ASOS sites, with hourly data for AWOS sites. The system URL is: <http://www.ncdc.noaa.gov/servlets/ULCD>

NCDC Updates Report on Billion Dollar Weather Disasters

NCDC updated its report and web page regarding billion dollar U.S. weather disasters since 1980. The updated report is being provided during the American Meteorological Society (AMS) national meeting in Seattle, and the complete web version of the report (with several maps and figures) is up to date through the events of 2003. During 2003, there were four events of this magnitude, resulting in over \$11 billion in damages and at least 110 fatalities. The URL for the report is: <http://www.ncdc.noaa.gov/oa/reports/billionz.html>

Integrated Surface Hourly (ISH) Global Database Version 2.1

The "database build" of ISH Version 2.1 for 1900-2003 was completed this year. This includes the integration of recently updated Air Force hourly data for 1993-2002 and the quality control (QC) processing of the full period of record to Version 2.1, which includes a few QC algorithms not included in the Version 2 processing completed in 2002. The complete ISH Version 2.1 global database has been placed in a restricted FTP area for download by several NOAA customers. These include the NOAA Aeronomy Laboratory, for diurnal temperature studies; the Climate Diagnostics Center, for various research projects; and the National Weather Service, for input into a wind-stratified conditional climatology product (forecast aid) for all NWS forecast offices.

WORLD WIDE WEB SERVICE

ADDRESS: <http://www.ncdc.noaa.gov/>

The National Climatic Data Center (NCDC) maintains an Internet World Wide Web (WWW) homepage service. This service was recently upgraded and enhanced with a new homepage and several new following pages for easier data access. Some of the datasets and products available via WWW are highlighted in the following pages, with at least the first page of the web system shown, and examples shown of a few of the products available. Our WWW service is frequently updated, so we encourage you to check our homepage for the latest updates, and only use this Guide as an overview of some of our online products and services.

Our web system includes access to U.S. and global climatic data, satellite data, radar images, inventories of datasets available off-line, publications, climate monitoring reports, special reports on extreme weather events, and an on-line ordering system. Over 800 gigabytes of data and information are downloaded each month from this system. If you encounter slow response from the system during peak hours (typically late morning through afternoon), we suggest you try again during other times of day (or night). We appreciate your usage and suggestions!

Following is an outline of our current online datasets and products. For a link to this list and to each of the items listed, see <http://www.ncdc.noaa.gov/oa/climate/climatedata.html>

Our most popular products are highlighted at

<http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwAW~MP>

For a quick-review matrix of datasets and products, see

<http://www.ncdc.noaa.gov/oa/climate/dataset.html>

For a U.S. station locator, go to:

<http://www.ncdc.noaa.gov/oa/climate/stationlocator.html>

For our Online Store, go to:

<http://ols.ncdc.noaa.gov/plolstore/plsql/olstore.main?look=1>

For our Climate Data Online system, go to <http://cdo.ncdc.noaa.gov/>

Some of the datasets and products listed below are free of charge, while some require payment through the Online Store. For “noaa” and “edu” domain users, all products are free of charge.

Climatology, Climate Monitoring, & Extreme Events

Extreme Weather and Climate Events System

(Maps, tables, reports...US/global historical extremes, severe weather, recent events, climate monitoring, etc)

U.S. Climatological Averages and Normals

(Long-term monthly averages/normals for over 270 U.S. cities)

U.S. Storm Events Database

(1950 - present, local storm reports, damage reports, etc from various sources)

Climate Maps of the United States

(Over 700 maps of climate normals)

U.S. Climate Normals, 1971-2000

(The new US climatological normals)

Climate Monitoring

(Numerous reports, maps, graphs, and data depicting climate trends, etc)

Climatic Summaries in Published Form:

Afghanistan & Surrounding Areas Climatology (Numerous data sources & summaries)

Annual Climatological Summaries (Monthly/annual summaries for ~ 8000 U.S. locations)

Climatological Data (Daily/monthly data for ~ 8000 U.S. locations)

Climate Variations Bulletin (Monthly reports of U.S. climate)

Climatic Data for Frost-Protected Shallow Foundations

Climatic Maps for the U.S. (Selected maps from the Climate Atlas)

Comparative Climatic Data (Climatological averages for U.S. cities)

Climates of the World (PDF format, regional narratives and climatic tables by city)

Climatography of the U.S. - Supp #3 (Maps of temperature, precip, degree days)

Freeze/Frost data for the U.S. (PDF format)

Frost Free Maps for the U.S. (Based on 28F and 32F temperatures)

Heating and Cooling Degree Days (Monthly state, regional, and national degree days)

Hourly Precipitation Data (Hourly precip data for over 2500 U.S. locations)

Local Climatological Data (Hourly/daily data for nearly 300 U.S. cities)

Monthly Climatic Data for the World (Selected worldwide cities' climate summaries)

Rainfall Frequency Atlas of the US (Frequency distributions for heavy rainfall)

Storm Data Publication (Monthly reports of damaging weather)

Wind Climatology (PDF format, wind climatology for selected U.S. cities)

Surface Data: Graphs & Maps

Climate Visualization (CLIMVIS)

(Graphics / Selection of global station data--includes daily values for U.S. and global stations, and monthly data for global stations and U.S. climate divisions)

NCEP Charts

(Graphics / Selection of numerous surface and upper air charts)

Climate Maps of the United States

(Over 700 maps of climate normals)

Surface Data: Hourly (Temperature, Precipitation, Winds, Pressure, Etc)

Data Files and Graphics:

- U.S. Climate Reference Network--Select by Station

(2001 - present, all elements *)

Data Files and Printable Forms:

- Global Surface Hourly--Select by Station
(Period of record now being updated, over 10,000 stations, all elements *)
- U.S.--Select by Station (Unedited Local Climatological Data)
(1996 - present, over 300 stations, before final quality control, all elements *)
- U.S.--Select by Station (Edited Local Climatological Data)
(1996 - present, over 300 stations, after final quality control, all elements *)
- U.S.--Select by Station (Unedited Surface Weather Obs, 10A/B)
(1996 - present, over 300 stations, before final quality control, all elements *)

Data Files:

- U.S. Hourly Precipitation--Select by Station
(Full period of record, 1948 - present, over 6000 stations)
- U.S. 15-Minute Precipitation--Select by Station
(Full period of record, 1971 - present, over 3400 stations)

Surface Data: Daily (Temperature, Precipitation, Winds, Pressure, Snow, Etc)

Data Files and Graphics:

- Global and U.S.--Select by Station, or All Stations by Month
(1994 - present, over 8000 worldwide stations, over 1000 in U.S., all elements *)
- Global Climate Observing System
(As early as 1916 - latest available, over 200 stations, temps, pressure, precipitation)

Data Files and Printable Forms:

- U.S. High Resolution--Select by Station (Cooperative, NWS)
(Full period of record, 1948 - present, over 18000 stations, all elements *)
- U.S.--Select by Station (Unedited Local Climatological Data)
(1996 - present, over 300 stations, before final quality control, all elements *)
- U.S.--Select by Station (Edited Local Climatological Data)
(1996 - present, over 300 stations, after final quality control, all elements *)

Data Files:

- World War II Era
(1940 - 1945, 162 stations, all elements *)
- Daily U.S. Historical Climate Network
(1901 - 1997, 138 selected long-term stations, temperature and precipitation)

Surface Data: Monthly (Temperature, Precipitation, Pressure, Etc)

Data Files and Graphics:

- Global Data--Select by Station, or All Stations
(*"GHCN"*, 1800 - latest available, over 7000 stations, temperature/precip/pressure)
- U.S. Data--Climate At A Glance
(National, regional, statewide and city data from 1895 to the present)

- U.S. National/State/Divisional Data--Select by State/Division, or Complete Dataset, or Plot (Line Graph) Divisional Averages
(1895 - present, national/state/divisional averages by month, temperature, precip)
- Global Climate Observing System
(As early as 1916 - latest available, over 200 stations, temps, pressure, precipitation)

Data Files and Printable Forms:

- U.S. Data--Select by Station (Unedited Local Climatological Data)
(1996 - present, over 300 stations, before final quality control, all elements *)
- U.S. Data--Select by Station (Edited Local Climatological Data)
(1996 - present, over 300 stations, after final quality control, all elements *)
- Annual Climate Summaries--Select by Station (Cooperative Network)
(1996 - present, over 8000 stations, temperature and precipitation)

Data Files:

- U.S. High Resolution--Select by Station (Cooperative, NWS)
(Full period of record, 1948 - present, over 18000 stations, all elements *)
- Global Data--Select by Station
(1986 - latest available, over 3000 stations, all elements *)
- U.S. Precipitation Data by State
(1948 - 1997, over 8000 active stations, cooperative network + NWS sites)
- U.S. Historical Climate Network Data
("USHCN", 1880 - 2000, over 1000 long-term stations, temperature and precip)

Surface Data: Modeled

Data Files and Graphics:

- Global Surface Temperature Anomalies (Modeled)
(1992 - present, monthly temperature)
- Gridded Climate and Satellite Data (Modeled)
(1860 - 1996, monthly temperature and precipitation)

Data Files:

- Global Climate Model--100 Year Run, or 1000 Year Run
(Temperature and precipitation models based on CO2 estimates)

Marine Data

Data Files and Graphics:

- Global Buoy Data--Select by Buoy
(1994 - present, click on ocean basin for station list, all elements *)

* - "all elements" - Indicates all available climatic elements as reported by each station, such as winds, temperature, dew point, visibility, pressure, weather conditions, precipitation amount, snow depth, etc.

NCDC HOMEPAGE



NOAA Satellites and Information

National Environmental Satellite, Data, and Information Service



**National Climatic
Data Center**

[DOC](#) > [NOAA](#) > [NESDIS](#) > [NCDC](#)

Keyword(s), City, Station Name

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World's Largest Archive of Climate Data

National Climatic Data Center

Protecting the Past, Revealing the Future

Satellite

Marine

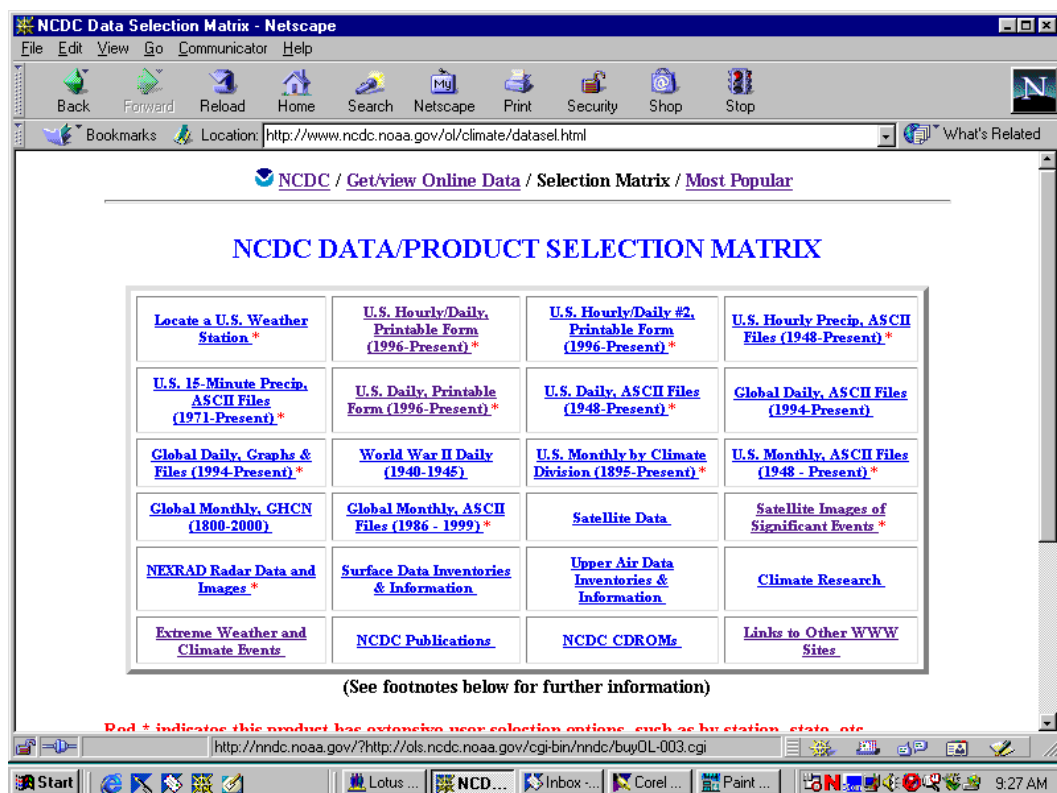
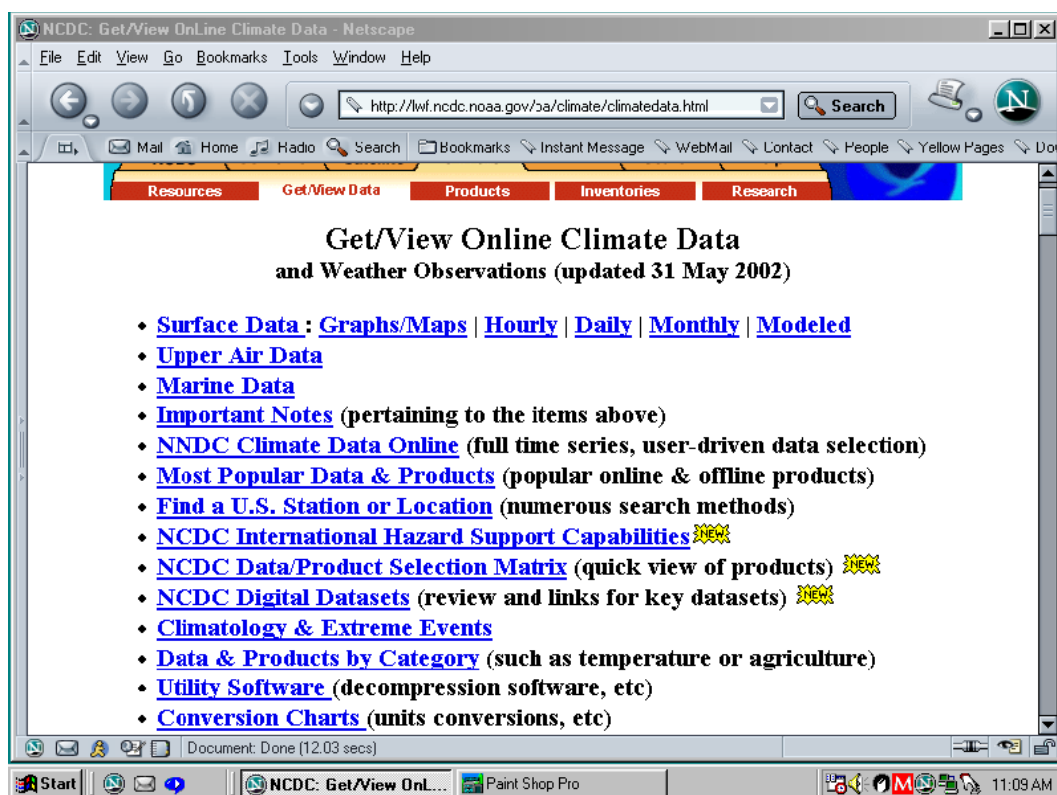
Upper Air

Land Based

Other Climate Events and Information

ONLINE DATA AND PRODUCT ACCESS

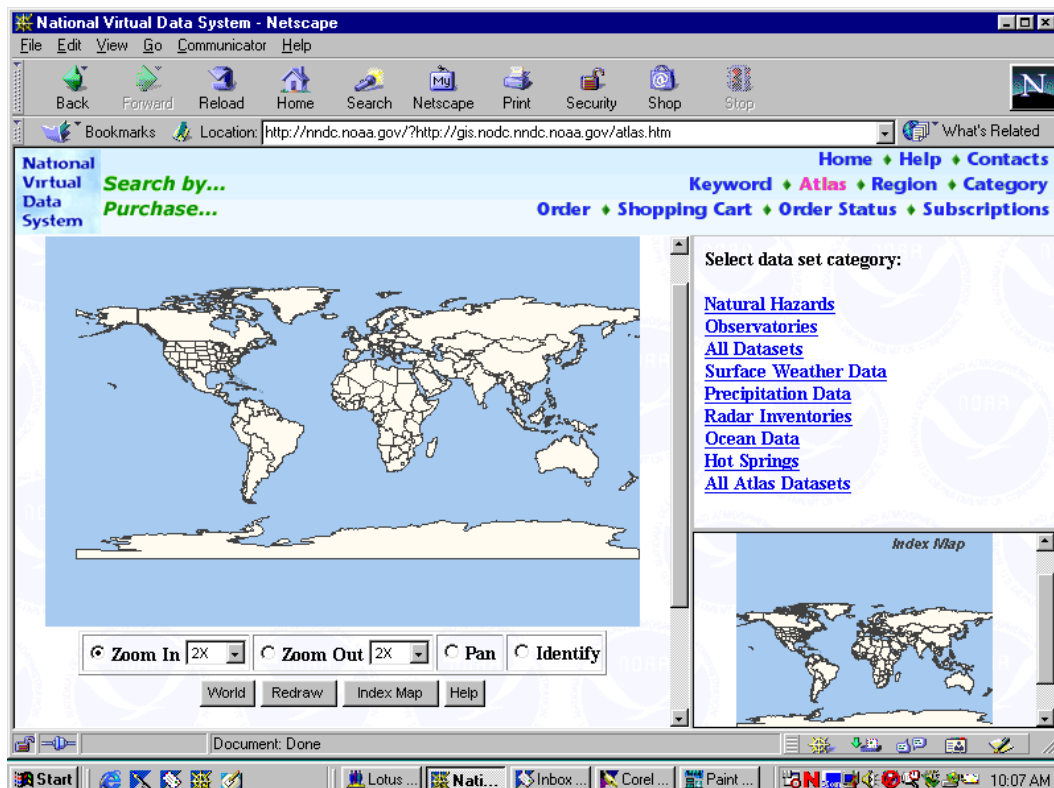
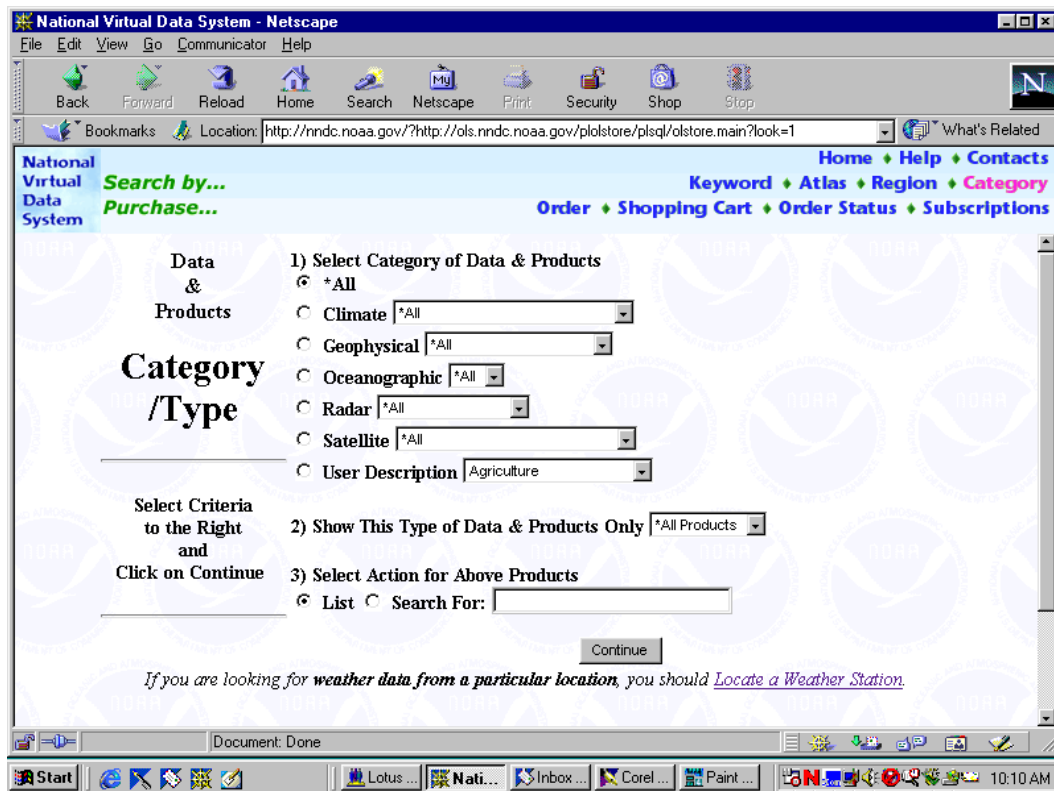
Centralized access to NCDC online products and services....

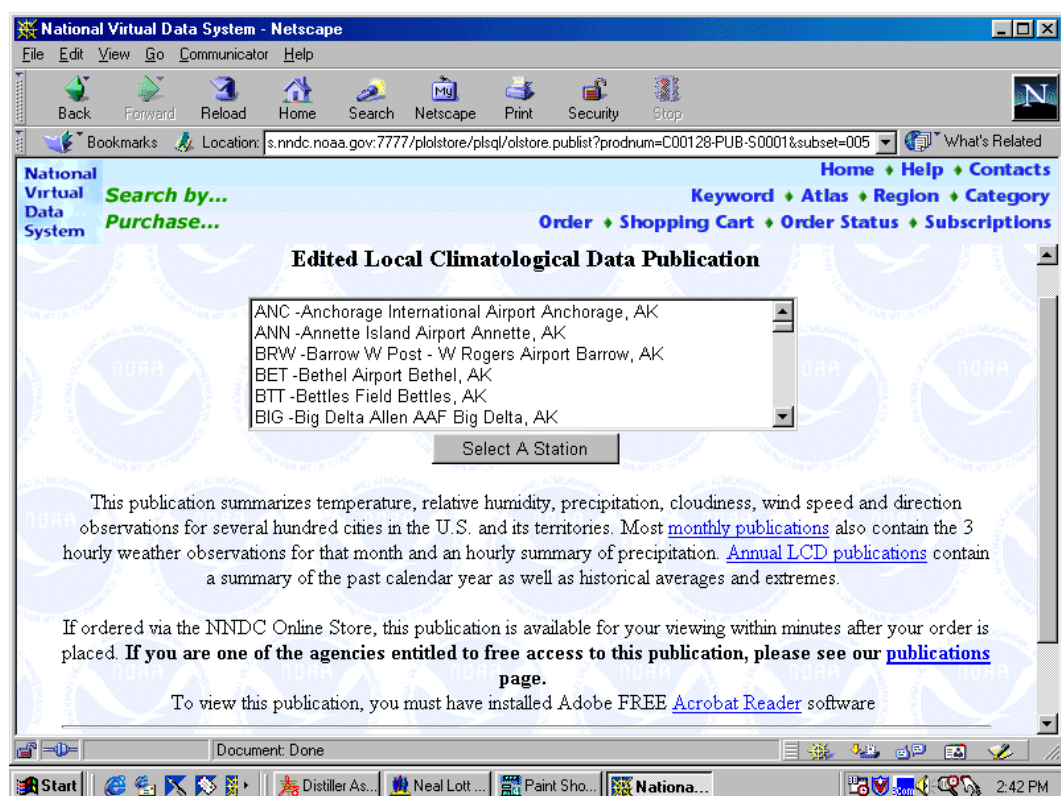
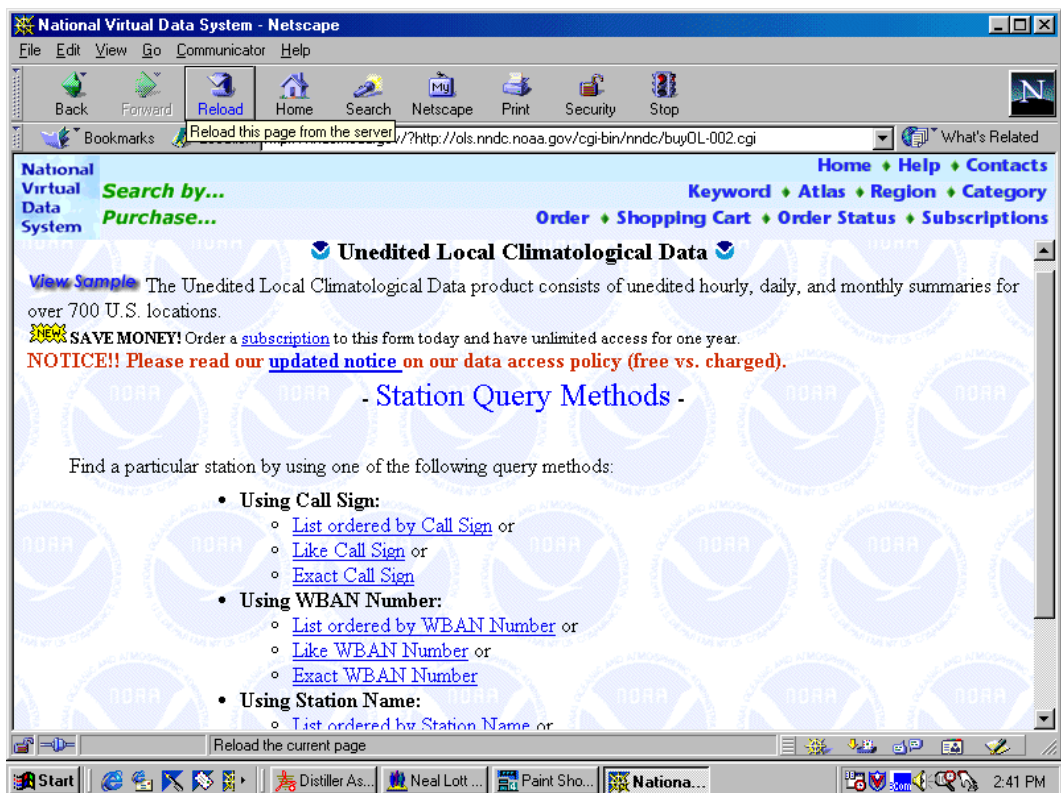




THE ONLINE STORE

Access to NCDC products for which \$\$ charges may apply, including CDROM products....





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Bookmarks Location: <http://nndc.noaa.gov/?http://ols.ncdc.noaa.gov/cgi-bin/nndc/buyOL.001.cgi> What's Related

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Keyword Atlas Region Category
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Unedited Surface Weather Observations

[View Sample](#) The Unedited Surface Weather Observations product consists of unedited hourly observations from over 700 U.S. locations.

NEW SAVE MONEY! Order a [subscription](#) to this form today and have unlimited access for one year.

NOTICE!! Please read our [updated notice on our data access policy \(free vs. charged\)](#).

- Station Query Methods -

Find a particular station by using one of the following query methods:

- Using **Station Name:**
 - [List ordered by Station Name](#) or
 - [Like Station Name](#) or
 - [Exact Station Name](#)
- Using **Call Sign:**
 - [List ordered by Call Sign](#) or
 - [Like Call Sign](#) or
 - [Exact Call Sign](#)
- Using **WBAN Number:**
 - [List ordered by WBAN Number](#) or
 - [Like WBAN Number](#) or
 - [Exact WBAN Number](#)

Document: Done

Start National Vi... Inbox - Netsc... Lott Neal - D... Corel WordPe...

2:03 PM

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http://nndc.noaa.gov/?http://ols.ncdc.noaa.gov/cgi-bin/nndc Search

Mail Home Radio Search Bookmarks Instant Message WebMail Contact People Yellow Pages Do

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HOURLY OBSERVATIONS TABLE

MONTH: 01/2003
ASHEVILLE, NC

Date	Time	Station	Maintenance indicator	Sky Conditions	Visibility	Weather Type	Dry Bulb Temp (F)	Dew Point Temp (F)	Wet Bulb Temp (F)	%Relative Humidity	Wind Speed (KT)	Wind Dir	Wind Chills (KT)	Val. for Wind Pressure	Station
01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
01	0010	A020		BKN011	10SM						6	210		0	
01	0030	A020		BKN007 BKN013	8SM						7	180		0	
01	0054	A020		OVC005	6SM	BR	52	52	52	100	8	150		0	27.49
01	0113	A020		OVC003	4SM	-RA BR					7	150		0	
01	0128	A020		OVC001	2SM	BR					5	150		0	
01	0140	A020		OVC001	1.14SM	BR					6	180		0	
01	0154	A020		BKN001 OVC014	1.03SM	FG	52				7	150		0	27.48
01	0206	A020		BKN001 OVC016	1.12SM	BR					7	150		0	
01	0210	A020		SCT001 OVC017	2.12SM	BR					6	160		0	
01	0222	A020		FEW001 OVC017	3SM	-RA BR					5	160		0	
01	0254	A020		FEW009 BKN019 OVC026	3SM	-RA BR	53.1	53.1	53.1	100	4	VEB		0	27.46
01	0334	A020		BKN009 BKN013 OVC029	3SM	-RA BR					6	140		0	
01	0354	A020		SCT009 OVC016	3SM	-RA BR	54	54	54	100	9	140		0	27.43
01	0401	A020		SCT007 BKN013 OVC018	4SM	-RA BR					8	130		0	
01	0413	A020		FEW005 BKN013 OVC018	2.12SM	-RA BR					7	130		0	
01	0417	A020		FEW005 BKN017 OVC026	3SM	-RA BR					7	150		0	
01	0426	A020		SCT005 BKN010 OVC024	6SM	-RA BR					5	150		0	
01	0454	A020		FEW005 OVC019	10SM	-RA	54	54	54	100	5	140		0	27.42

Document: Done (5.28 secs)

Start National Virtual Data ...

1:20 PM

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Summary of the Day

- COOP Station Query Methods -

Find a particular COOP station by using one of the following query methods:

- by [State, Territory, or Country](#)
- by [Station ID](#):
 - [Like Station ID](#) or
 - [Exact Station ID](#)
- by [Station Name](#):
 - [Like Station Name](#) or
 - [Exact Station Name](#)
- by [Coordinate Ranges](#).

[Summary of the Day](#)

The Summary of the Day product consists of daily observations from over 8000 sites in the U.S. for recent 12 months.

Document: Done

Start [Icons] Distiller As... Neal Lott... Paint Sho... Nationa... 2:44 PM

Record of Climatological Observations - Netscape

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http://lwf.ncdc.noaa.gov/servlets/DLY Search

Mail Home Radio Search Bookmarks Instant Message WebMail Contact People Yellow Pages Do

Station: PISGAH FOREST 1 N

State: NC County: TRANSYLVANIA Standard Time: EASTERN

Observation Time Temperature: 0700 Precipitation: 0700

(LST) Evaporation: Soil:

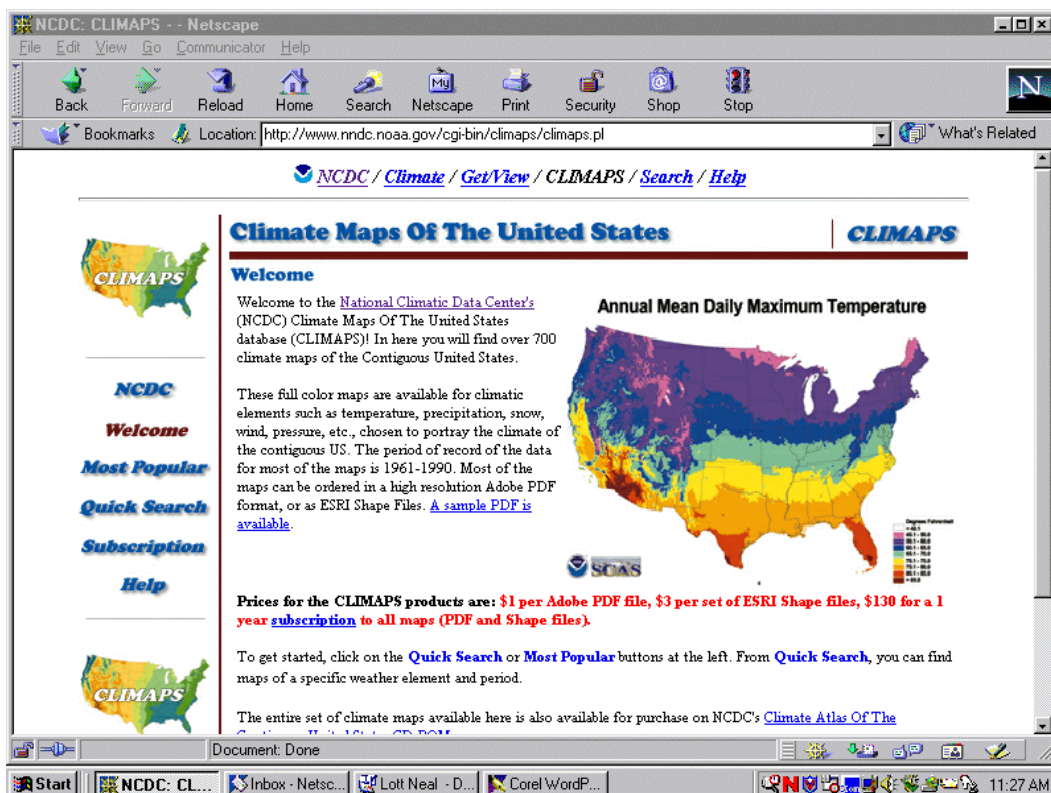
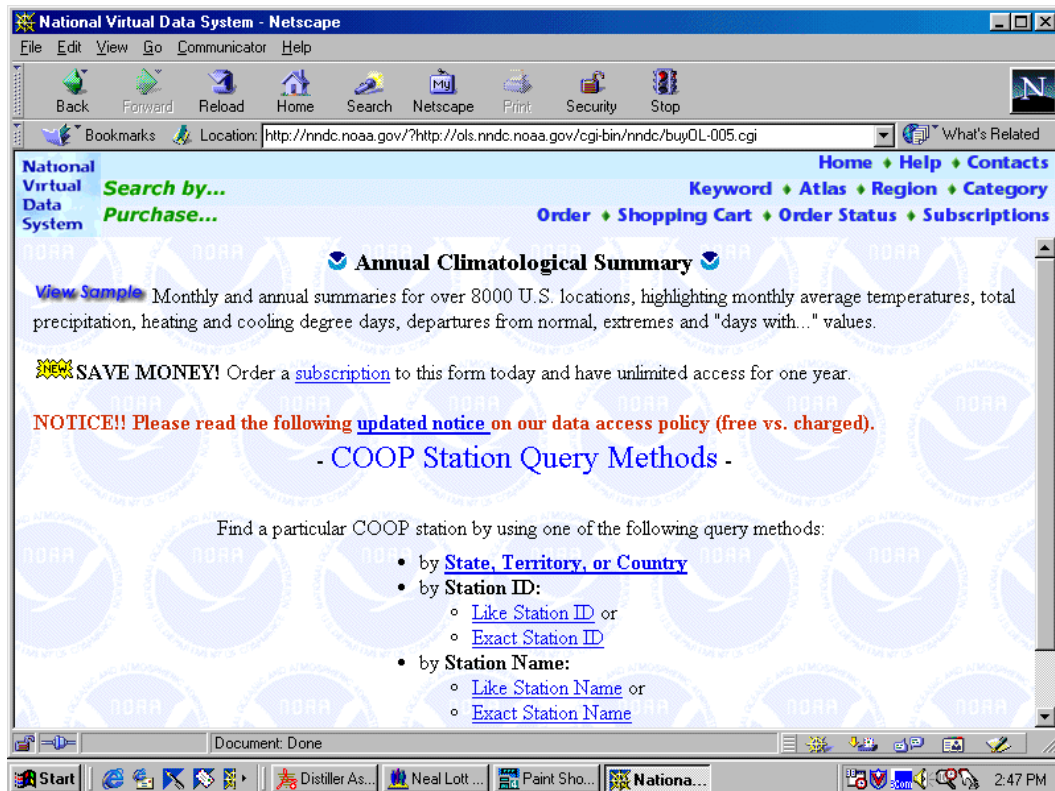
Record of Climatological Observations

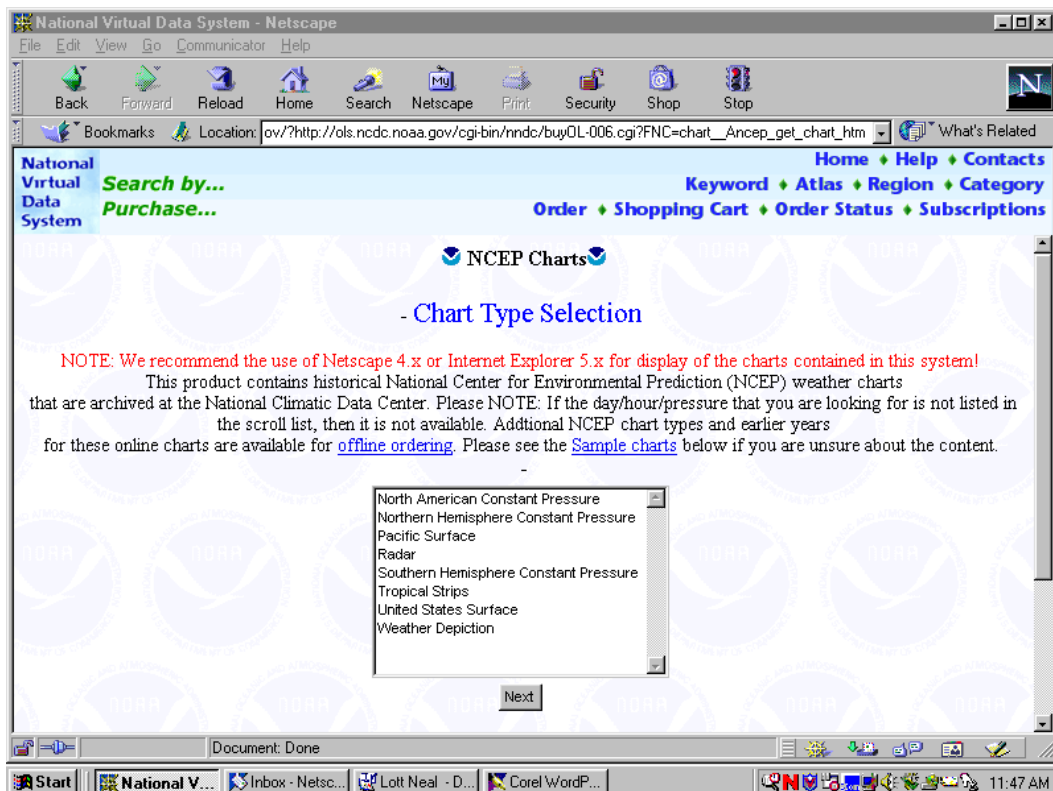
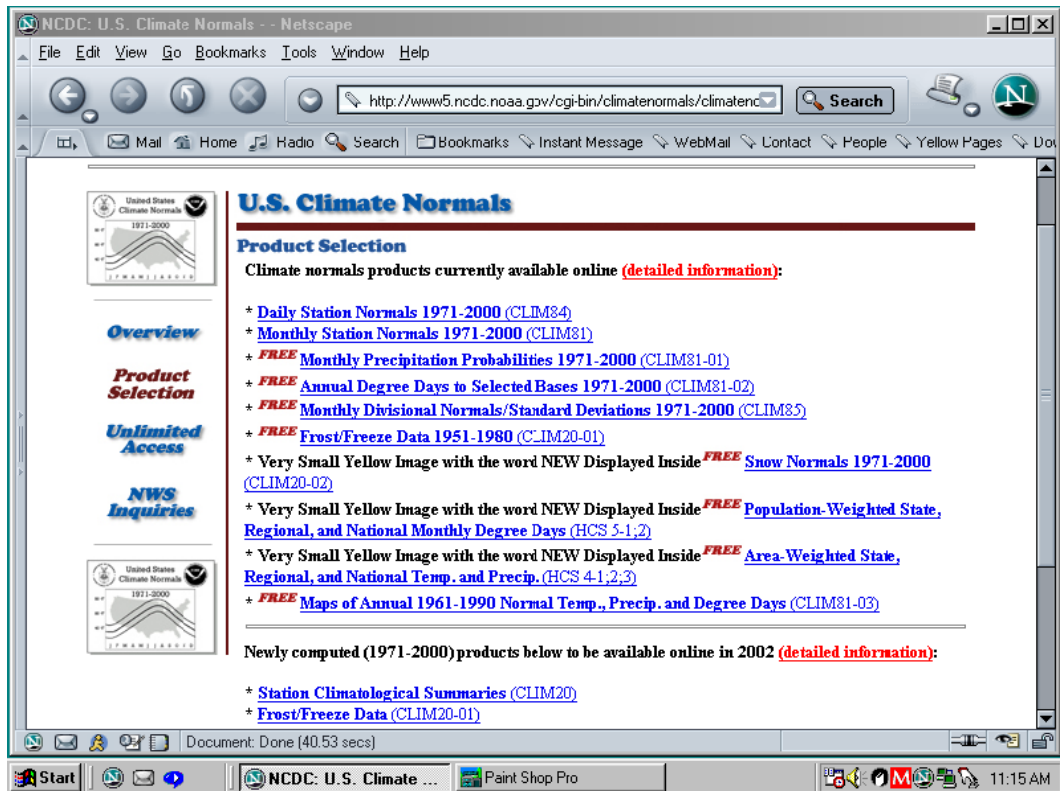
**** These data are quality controlled and may not be identical to the original observations ****

Year	Month	Day	Temperature (°F)			Precipitation (see *)			Evaporation	Soil Temperature (°F)								
			24 hrs. ending at observation time		at observation time	24 Hour Amounts ending at observation time	At Observation Time	24 Hour Wind Movement (miles)		Amount of Evaporation (Inches & hundredths)	4 inch depth		8 inch depth					
			Max.	Min.							Ground Cover (see *)	Max.	Min.	Ground Cover (see *)	Max.	Min.		
*	2002	11	1	56	29	31	0	0	99999									
*	2002	11	2	57	29	40	0	0	0									
*	2002	11	3	54	39	46	0	0	0									
*	2002	11	4	60	45	50	0	0	0									
*	2002	11	5	50	45	49	1.07	0	0									
*	2002	11	6	57	31	32	0	0	0									
*	2002	11	7	61	28	30	0	0	0									
*	2002	11	8	63	29	51	0	0	0									
*	2002	11	9	65	50	58	0.43	0	0									
*	2002	11	10	69	59	60	2.10	0	0									
*	2002	11	11	67	51	53	0.42	0	0									
*	2002	11	12	56	38	39	0.07	0	0									
*	2002	11	13	55	27	27	0	0	0									
*	2002	11	14	59	27	32	0	0	0									
*	2002	11	15	55	20	48	1.38	0	0									

Document: Done (3.84 secs)

Start [Icons] Record of Climatologi... 1:17 PM





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NNDC Online Store Checkout

 The NNDC Online Store encrypts information from this page forward using a [Verisign](#) Digital ID. This is one of the most secure ways to transmit personal information via the Internet.

Click to verify

Please enter the information below and click CONTINUE
All information preceded by an asterisk * must be entered!

Enter Billing Information	
*Email:	<input type="text" value="neal.lott@noaa.gov"/>
*First Name, MI, Last Name:	<input type="text"/> <input type="text"/> <input type="text"/>
*Customer Class:	PLEASE CHOOSE FROM THE LIST <input type="button" value="v"/>
Institution/Company:	<input type="text"/>

Document: Done

Start NOAA Virtual Data Sy... Inbox - Netscape Folder Lott Neal - Dec 24 to Dec... 1:57 PM

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*Address:	<input type="text"/> <input type="text"/> <input type="text"/>
*City:	<input type="text"/>
*State/Province:	<input type="text"/>
*Country:	USA <input type="button" value="v"/>
Why are all countries not listed?	
*Zip/Postal Code:	<input type="text"/> - <input type="text"/>
*Telephone Number:	<input type="text"/>
Fax Number:	<input type="text"/>
*Method of Payment: **No debit cards accepted. Please use credit cards only.	<input type="radio"/>  <input type="radio"/>  <input type="radio"/>  <input type="radio"/> 
*Name on Credit Card:	<input type="text"/>

Document: Done

Start NOAA Virtual D... Inbox - Netscape F... Lott Neal - Dec 24 ... Corel WordPerfect - ... 2:00 PM

NOAA NATIONAL DATA CENTER CLIMATE DATA ONLINE SYSTEM

The National Climatic Data Center developed the NOAA National Data Center Climate Data Online (NNDC CDO) System to a) provide fast, easy online access to a variety of climatic datasets; b) provide the climatic support and backbone for the NNDC Server; and c) facilitate migration from a Unisys mainframe customer support environment to an open systems unix environment.

The system includes both recent and historical data, useful for studies of particular weather events, and for historical analysis of data for statistical and other research purposes. The types of data currently included in the system, which continues to be populated, are surface daily and monthly data, hourly precipitation data, and 15-minute precipitation data. The system is being expanded, with global surface hourly data now being added, and other datasets in the planning stages. The URL is: **<http://cdo.ncdc.noaa.gov>**.

The NNDC CDO backbone is an Oracle relational database system, using structured query language and other programming languages to retrieve data. Data are accessible and selectable by region, country, state (US), climate division (US), county (US), and station, and by time period (year, month, day, hour). The data are available free of charge to NOAA users and to educational institutions (.edu), with charges applied for other users via the **Online Store**. However, charges are greatly reduced as compared to traditional off-line delivery of climatic data.

The climatic data currently accessible are:

- Daily (primarily U.S.) for full period of digital record, typically 1948 to present, over 19,000 stations historically, over 8000 currently active.
- Monthly (primarily U.S.) for full period of digital record, typically 1948 to present, over 19,000 stations historically, over 8000 currently active.
- Global monthly for 1987 to present, over 3000 stations historically, over 1000 currently active.
- Hourly precipitation (primarily U.S.) for full period of digital record, typically 1948 to present, over 6000 stations historically, over 2800 currently active.
- 15-minute precipitation (primarily U.S.) for full period of digital record, typically 1971 to present, over 3400 stations historically, over 2400 currently active.
- Global surface hourly data (from Integrated Surface Hourly dataset) are being added to CDO, initially for the more recent data, then for full period or record, from as early as the early 1900's to present, approximately 20,000 stations historically and over 9000 currently active.

The main user interface (Figure 1) allows initial selection through a GIS map service, by region, by country, by station name, or by data type. So, you can select, for example, one country to see what types of data are available for that country. Or, you can select one data type to see what countries and stations have data available for that type of data.

The next “page” (Figure 2) allows selection of the entire dataset (‘worldwide’), selection by region, by country, or by station number range. Selection of United States as the country then leads to an interface (Figure 3) allowing selection by entire state, climate division, county, or

individual station(s). This is quite flexible in that you can select, for example, all stations in a county, or just pick selected stations from a particular state.

The next “page” will vary depending on what you selected so far. For example, if you choose “climate division” as your criteria, you’ll then see a map of the divisions for that state (Figure 4). If you choose “county” as your criteria, you’ll see a list of counties (Figure 5). If you choose station as your criteria, you’ll see a full list of stations for the state (Figure 6).

The next “page” (Figure 7) then provides for selection of the period/dates you require and the output format desired. Also, some datasets (e.g., daily, monthly) provide element selection capability on this page, so that you can select just the desired weather elements (e.g., precipitation, temperature). Our basic format options (for most datasets) are:

- Space-delimited with station name in each data record
- Space-delimited without station name
- Comma-delimited with station name in each data record
- Comma-delimited without station name
- The standard (archive) variable length format for that particular dataset
- The standard fixed length format for that particular dataset

Most users prefer one of the delimited formats. Comma-delimited is often better for import into a spreadsheet. Space-delimited is easier on the eyes and easy to write a program for, such as with Fortran or C++. The standard dataset formats are often required by users with application programs previously written for those specific NCDC formats.

The next “page” will provide a summary of your request and will then direct you into our Online Store, unless you have free access as mentioned above. The Online Store then requests payment information, with a similar interface as you would see for other online systems. At present, payment by credit card is the only option, but we plan to add a subscription option, whereby users will be able to subscribe to the system for a year at a fixed price.

Finally, you’re directed to an html address with a list of files that have been produced, or are being produced. Your data file may already be available, so you can click on the file to see if it’s there. If not, just bookmark the page for future reference. Also, you’re “double-covered” in that we send you an email with directions to your data when your order has finished processing. You’ll have access to the data file, an inventory for your selection, a station list, and data format documentation. Most small orders (e.g, a few mb) complete processing in a few minutes. However, some larger orders require a few hours to process, so keep that in mind after placing your order. Of course, if our system is quite busy, run times will be longer; and if the internet “lines” in your path to NCDC are busy, your time required to ftp the data files will be longer.

A complete help system is included (<http://www5.ncdc.noaa.gov/cdo/info.html>) with a data price schedule, general system information, detailed system help for diagnosing problems (e.g., inability to connect due to firewall on user end), format documentation, data samples, station lists, utility software, etc.

Although with limited publicity, this system has proven to be quite popular since its online implementation in June 1999. Customers for the available datasets are now frequently using this system rather than placing off-line orders by phone for later delivery by mail. However, when off-line orders are placed, NCDC uses NNDC CDO to fill the order and provide the data on the requested media (e.g., CDROM, zip disk, magnetic tape, ftp delivery). This means we only have to maintain one system for both online and off-line support for these datasets, and future datasets that will be added. That translates into substantial cost savings to the government.

We currently limit the data volume for a specific user-requested file to 40 mb, which is then compressed (gzip) to 5 mb or so. We plan to increase that limit in the near future, as bandwidth improvements allow. Of course, you can place several orders (i.e., for several files) in one web session to retrieve all of the required data. For the immediate future, we suggest that requirements for large data volumes (over ~ 100 mb) be placed as an off-line order by phone (828-271-4800) or email (ncdc.orders@noaa.gov).

Again, the system URL is: **<http://cdo.ncdc.noaa.gov>**. We encourage you to give it a try and provide feedback to us. We continue to implement enhancements to the system, with user feedback being a key to that process. Our long-term plan is for this system to be NCDC's primary method of delivering in-situ data to weather and climate data customers. Also, the capability to generate html printable forms directly from NNDC CDO will gradually be added to the current ASCII text output format options. Users may access both the NNDC CDO system and a separate system for printable forms via our homepage (<http://www.ncdc.noaa.gov>).

Figure 1

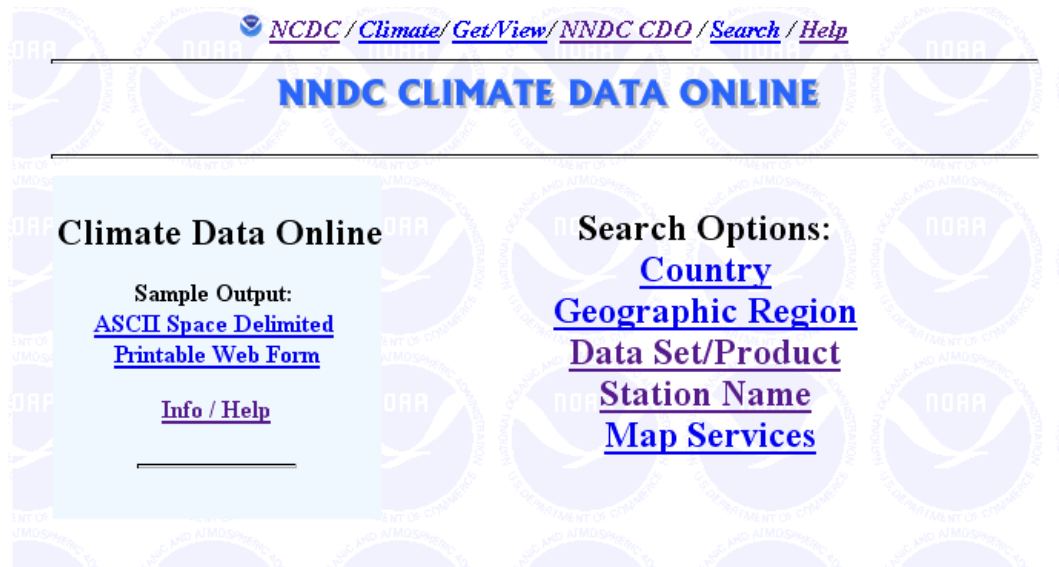


Figure 2

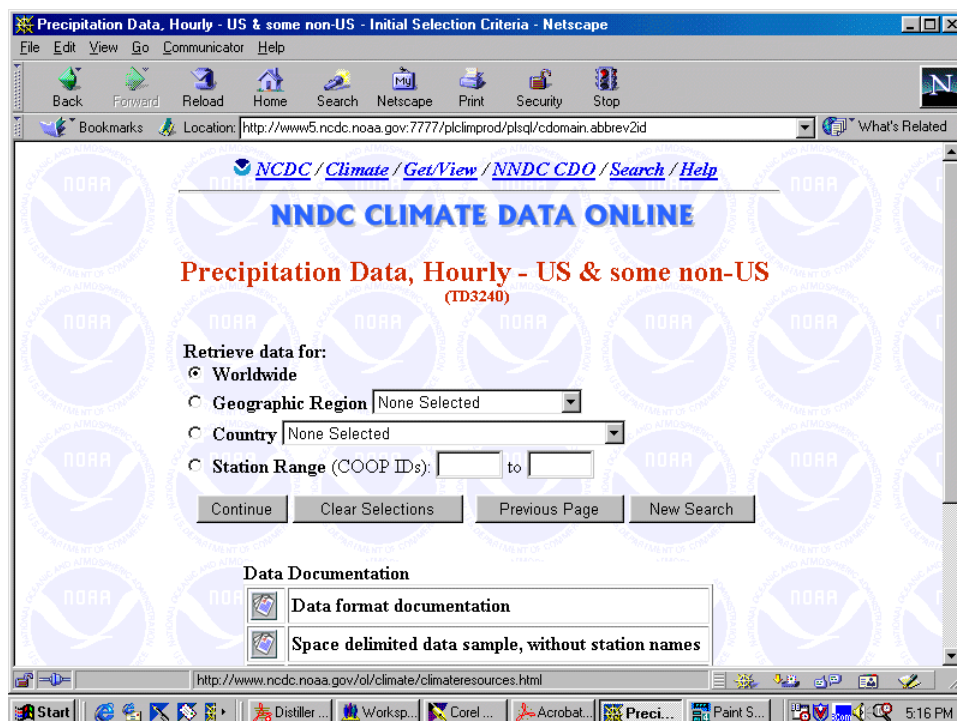


Figure 3

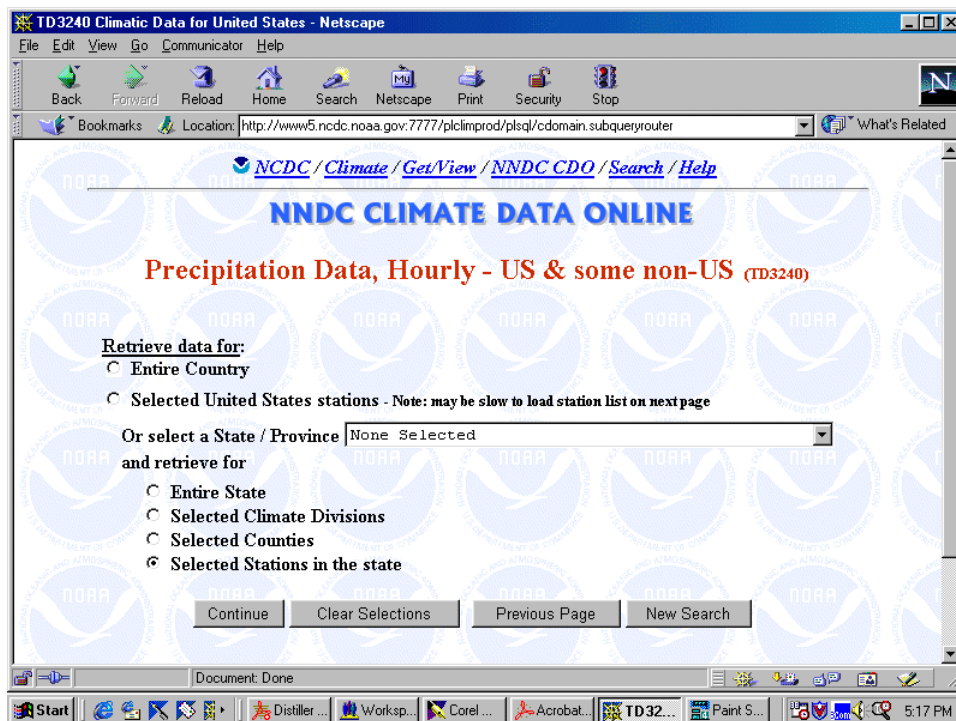


Figure 4

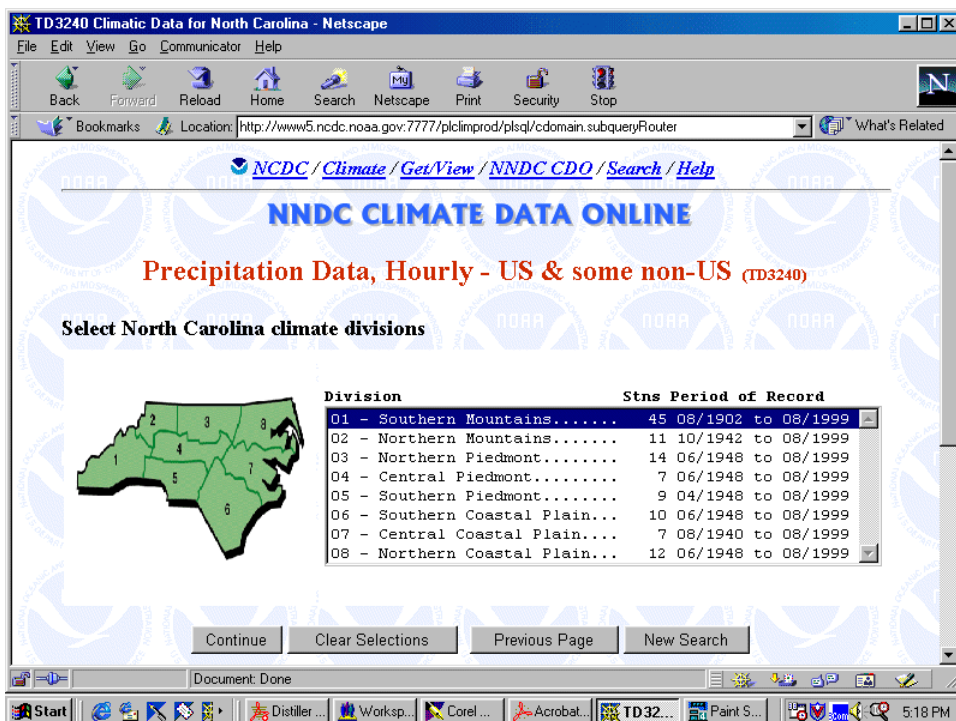


Figure 5

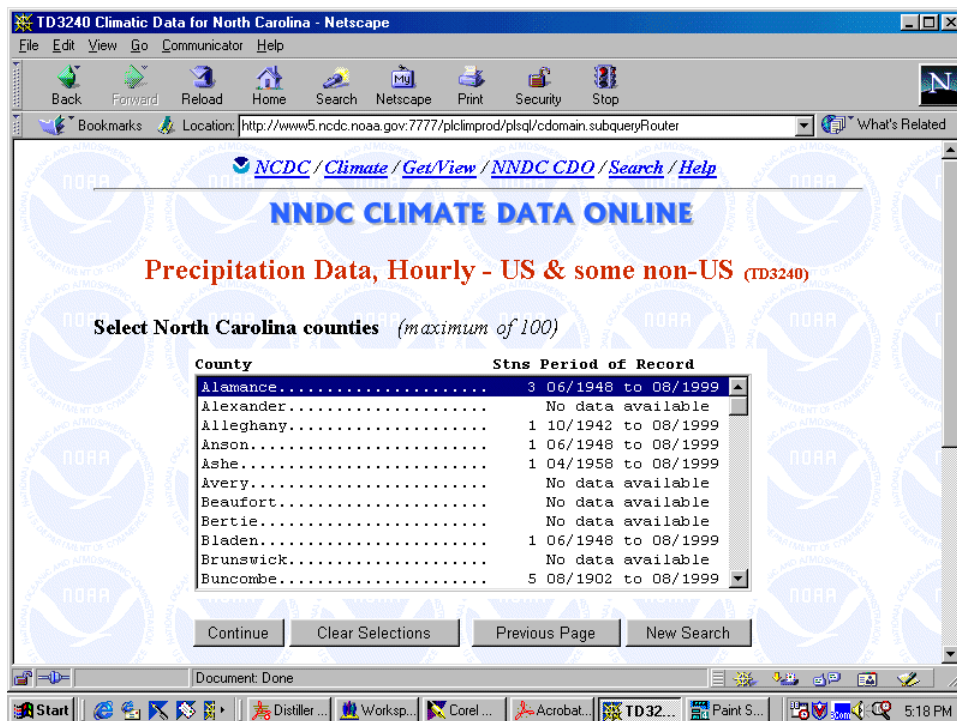


Figure 6

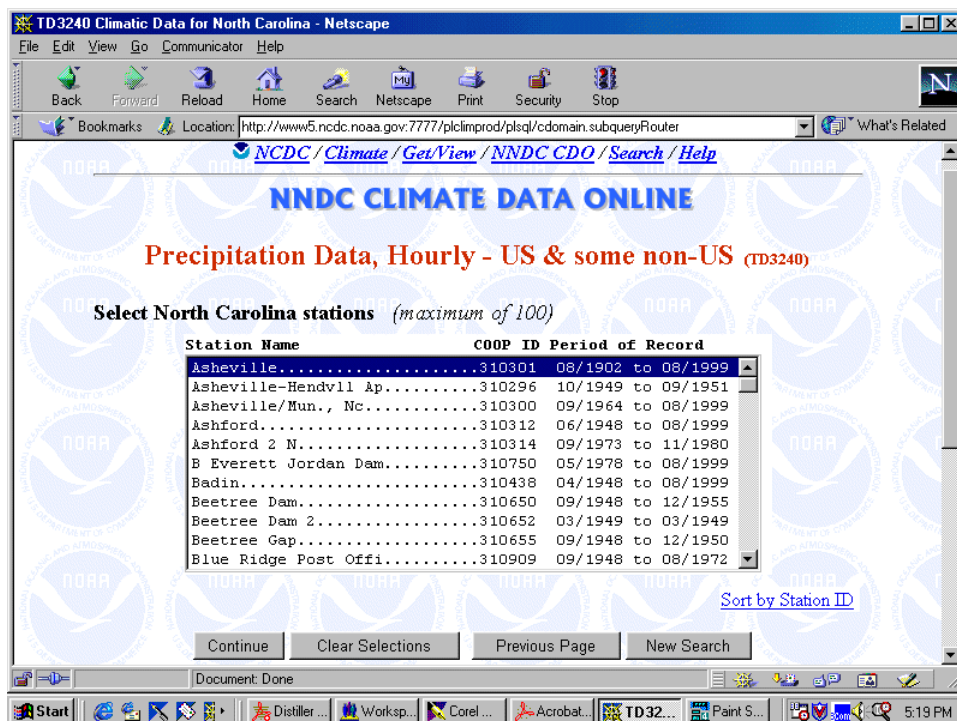


Figure 7

The screenshot shows a Netscape browser window titled "TD3240 Climatic Data for North Carolina - Netscape". The address bar shows the URL "http://www5.ncdc.noaa.gov:7777/plcimpd/plsql/cdomain.dateoutmode". The page content includes the NOAA logo, the title "NNDC CLIMATE DATA ONLINE", and the subtitle "Precipitation Data, Hourly - US & some non-US (TD3240) for North Carolina - 1 stations.".

Select Date Restrictions:

☒ Use Date Range == OR == ☐ Use Selected Dates

	Year	Month	Day
From	1999	08	01
To	1999	08	26

Year	Month	Day
1999	12	31
1998	11	30
1997	10	29
1996	09	28
1995	08	27
1994	07	26
1993	06	25
1992	05	24

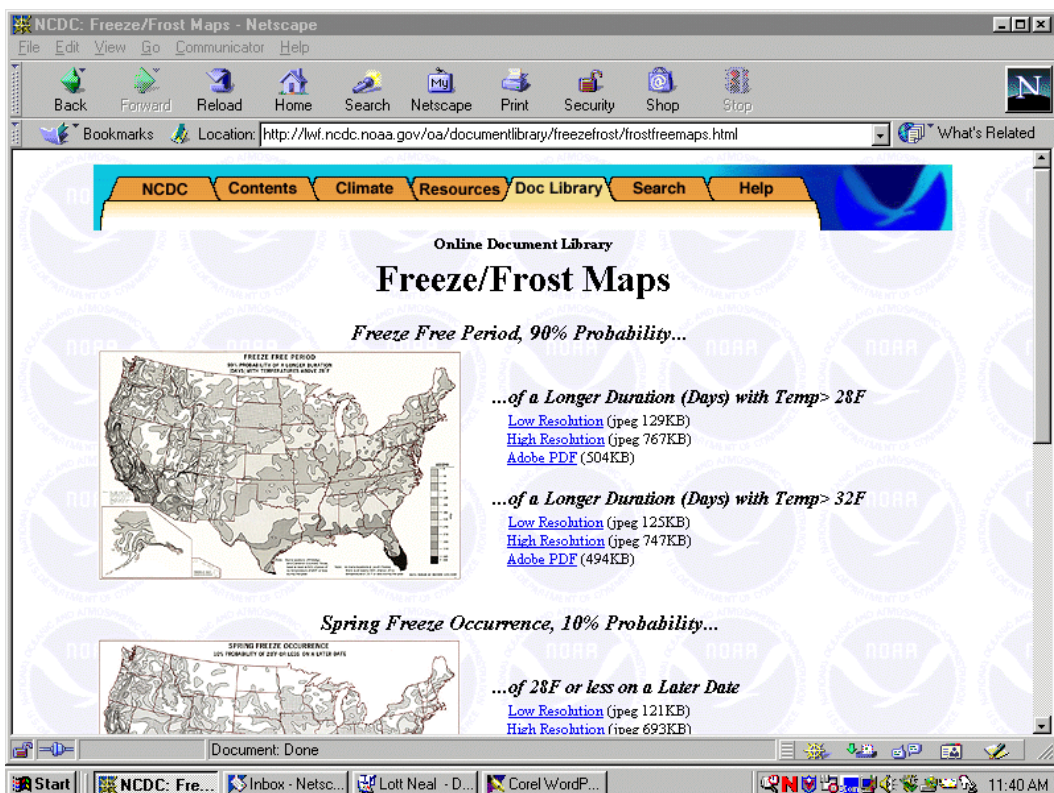
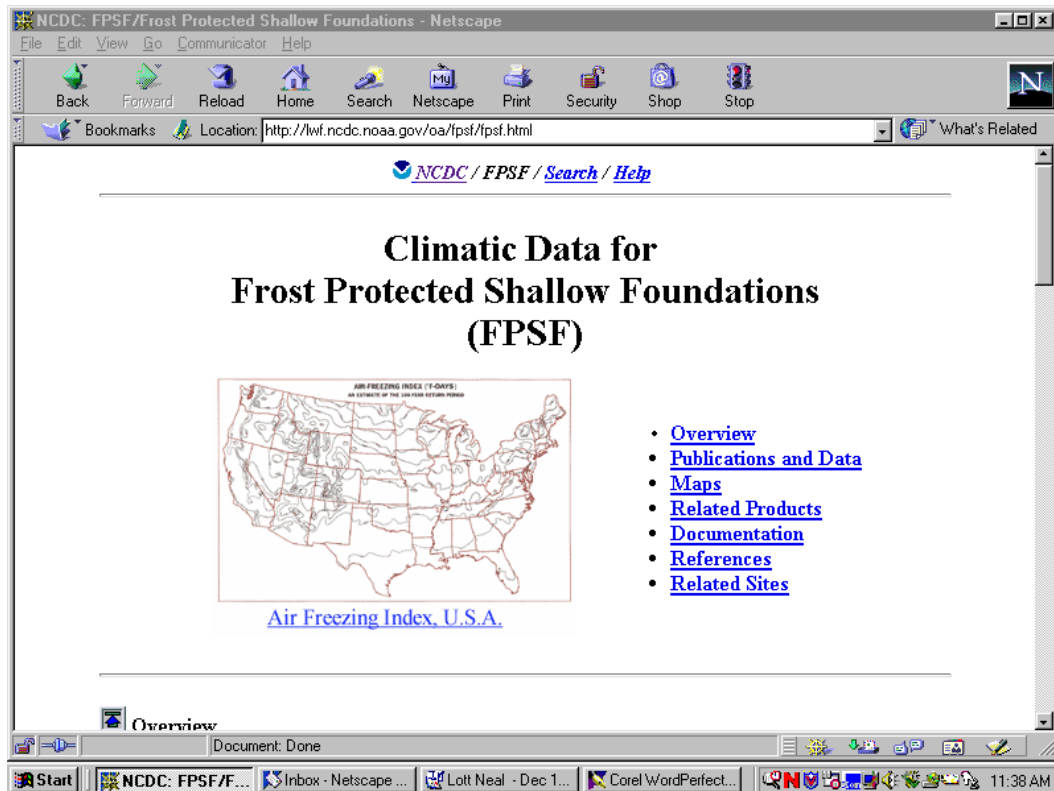
Select Output Format:
Delimited, with station name

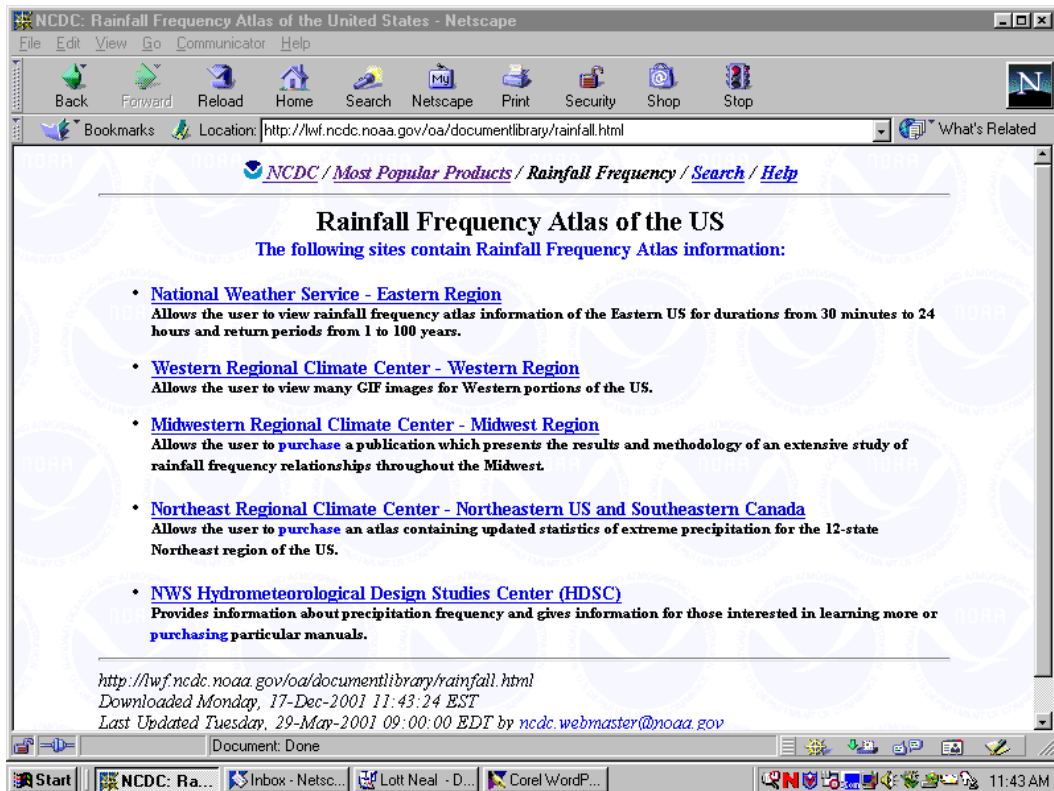
Select Output Media:
FTP

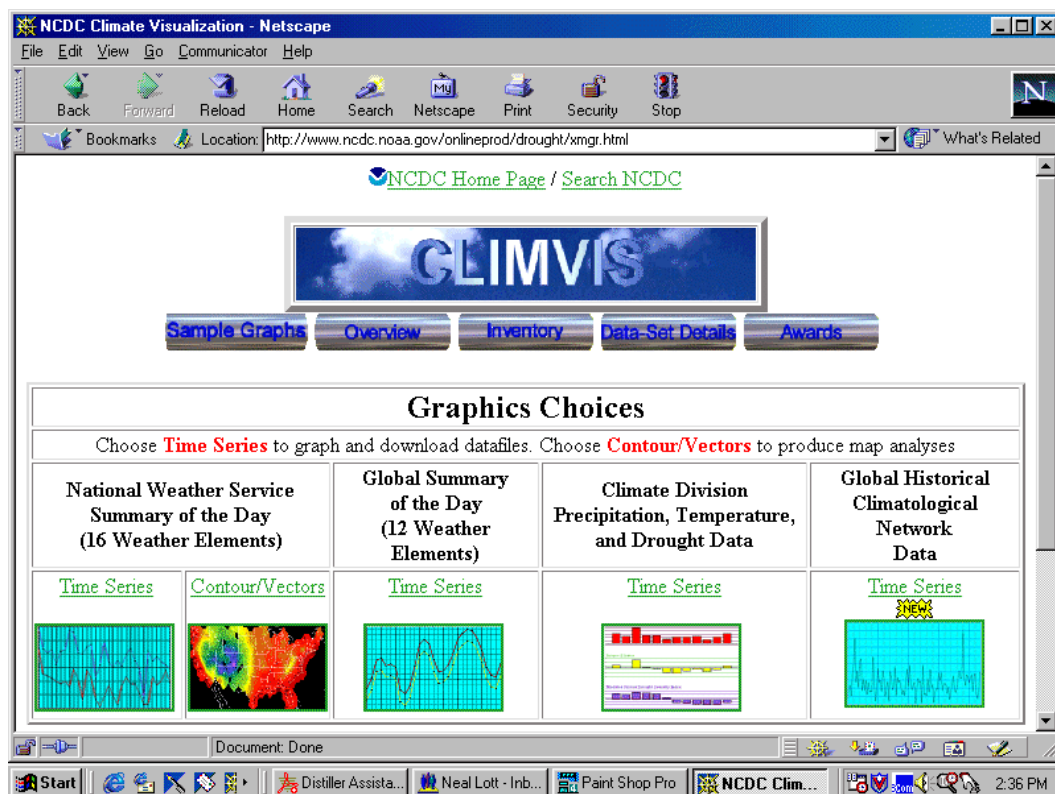
The browser's status bar shows "Document: Done" and the taskbar at the bottom includes icons for Start, Distiller, Worksp..., Corel..., Acrobat..., TD 32..., Paint S..., and a clock showing 5:20 PM.

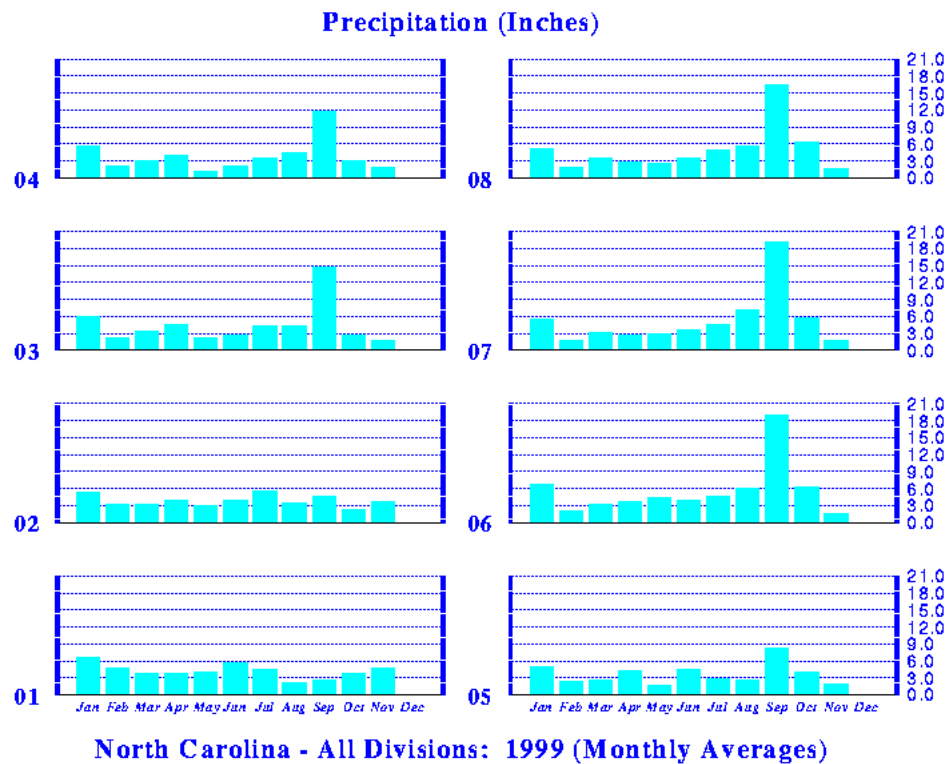
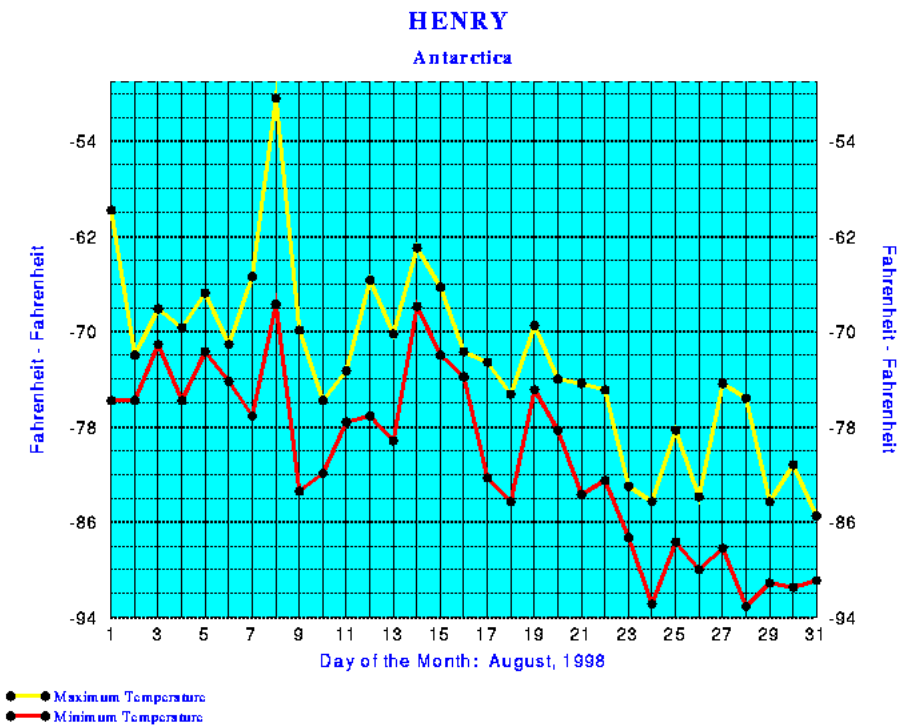
ADDITIONAL CLIMATIC PRODUCTS AND WEB PAGES

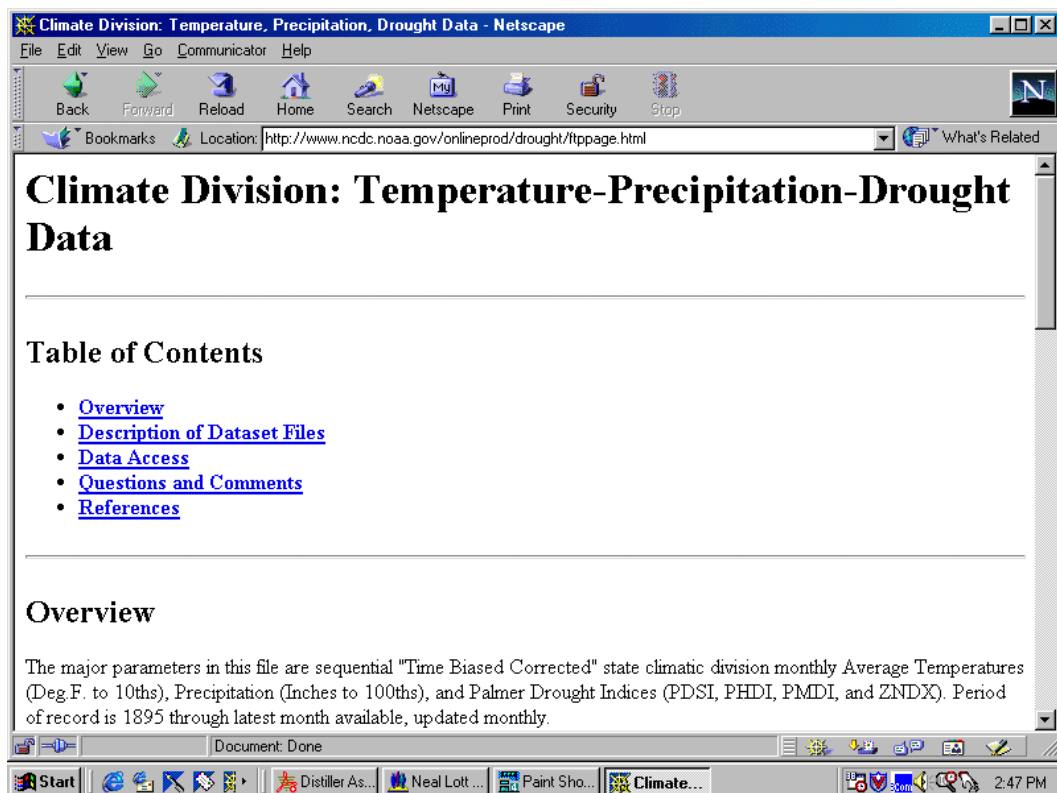
Online products which are generally free of charge....

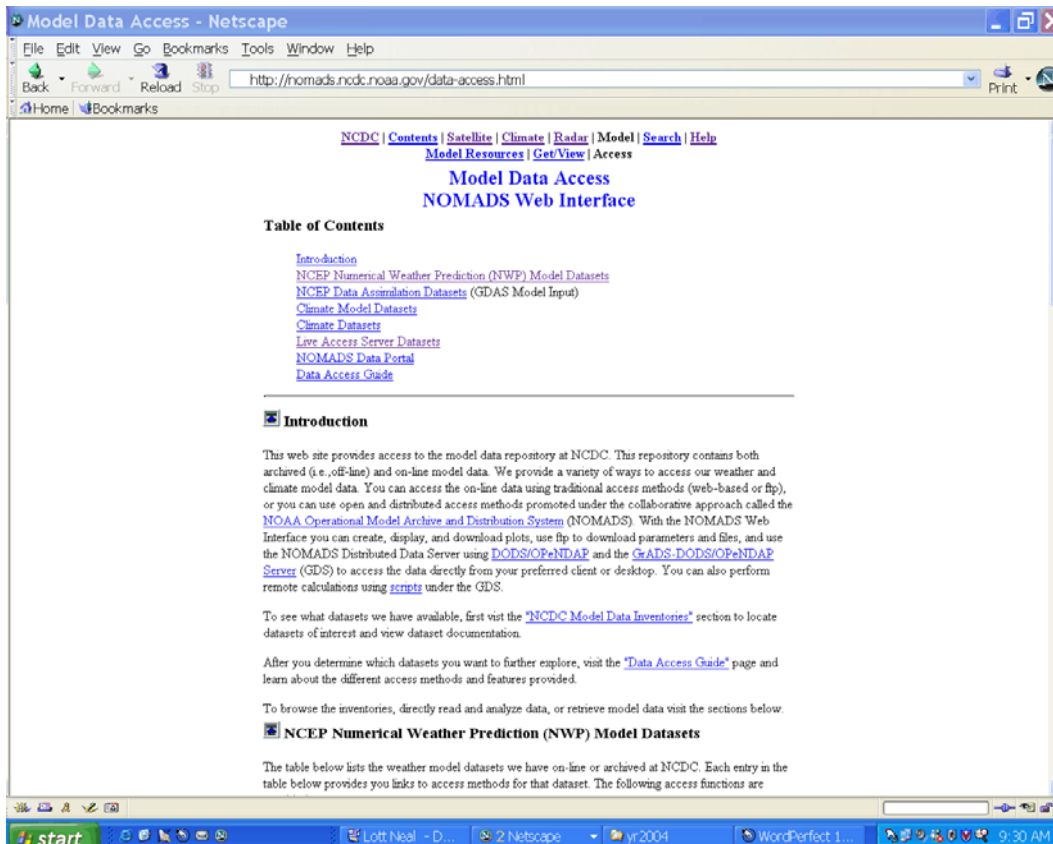
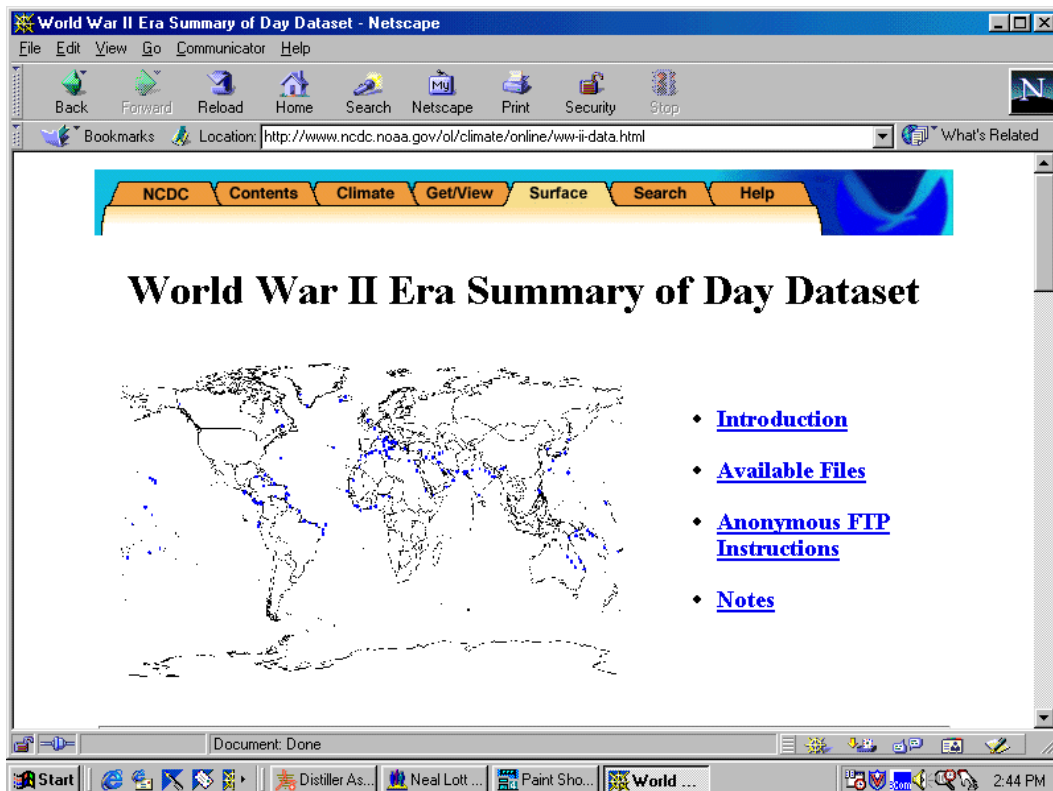












CLIMATE MONITORING AND EXTREMES

A wealth of information, data, graphics, etc related to climate monitoring and weather events....

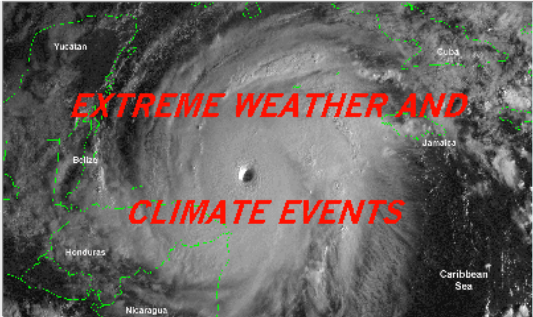
NCDC: Climatic Extremes and Weather Events - Netscape

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Bookmarks Location: <http://lwf.ncdc.noaa.gov/oa/climate/severeweather/extremes.html> What's Related

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U.S. Hurricanes	Heavy Precipitation	Temperature Extremes & Drought	U.S. Tornadoes
Billion \$\$ Weather Disasters			Worldwide Weather and Climate Events
Global Climate Change			Historical Global Extremes
El Nino/ La Nina			Satellite Images
Climate Monitoring	U.S. Local Storm Reports	Climatic Data	U.S. Radar Composites

<http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?WWNEXRAD~Images2>

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NCDC: Hurricanes - Netscape

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Hurricanes

Updated 26 November 2003



Hurricane Mitch

Note: The most recent update includes a map for the 1950-2002 period. Also, please check NOAA's [National Hurricane Center web site](#) for other maps and information.

Small—for a quick view, Large—larger image for printing

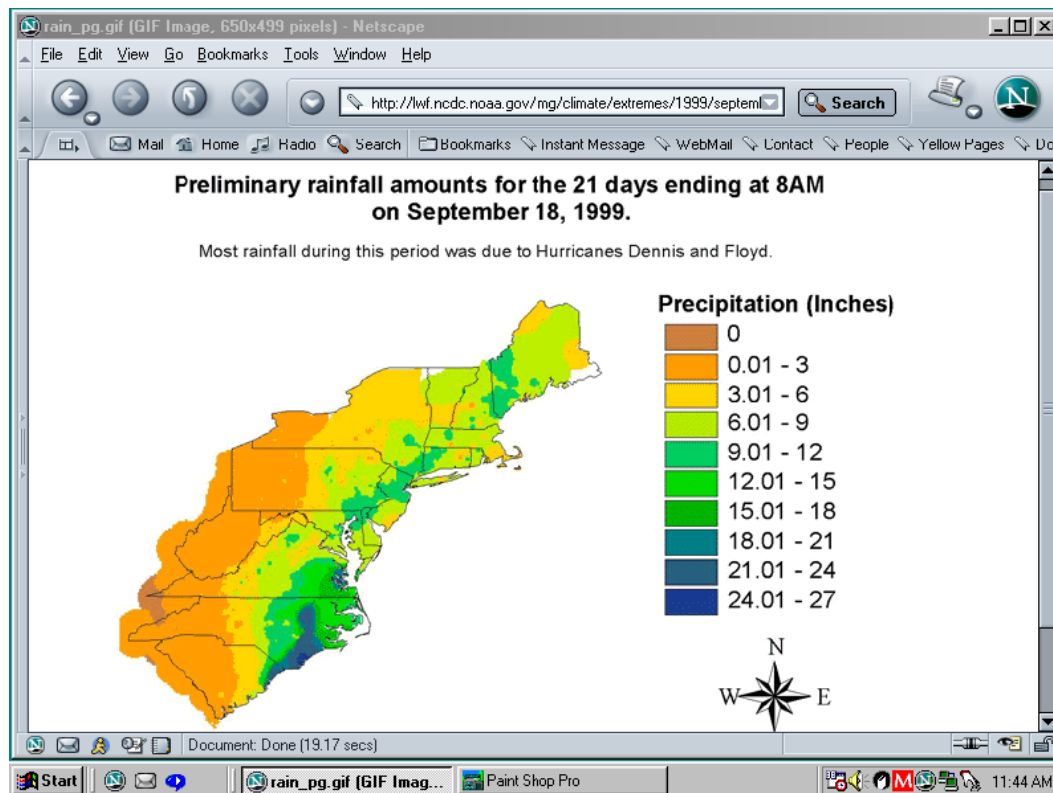
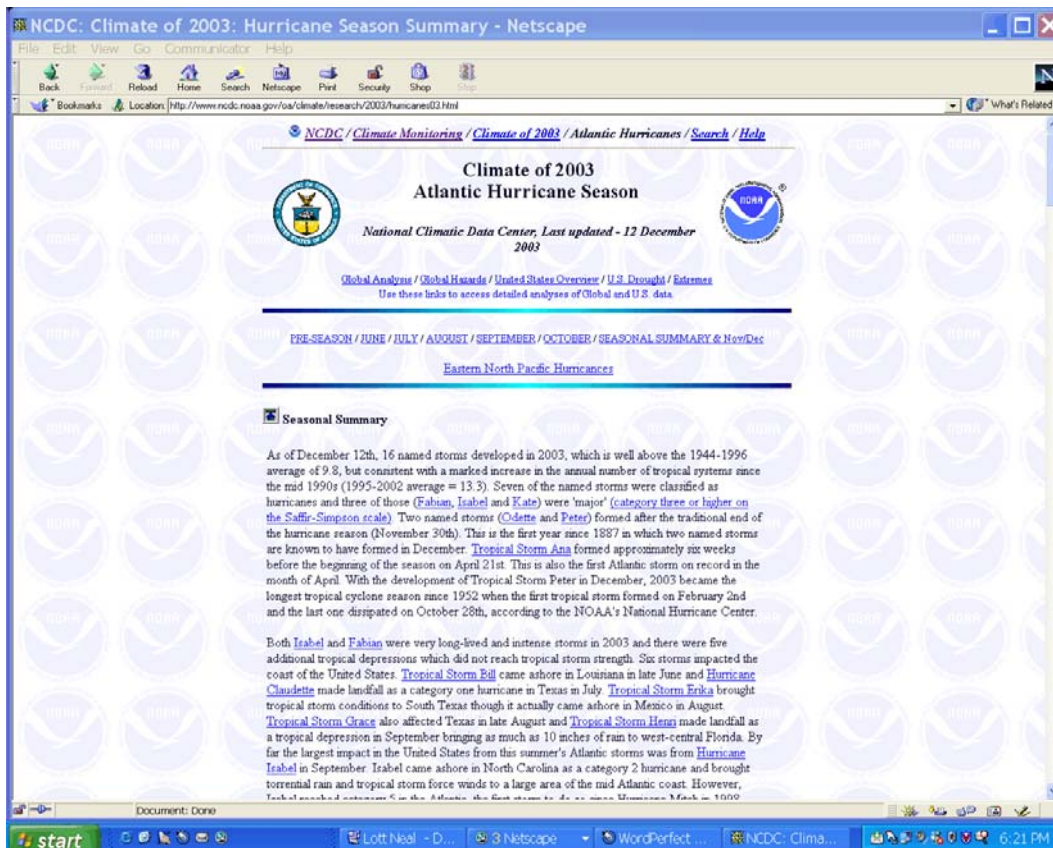
1899-1996 U.S. Landfalling Major Hurricanes—GIF Maps ([small](#)) ([large](#))

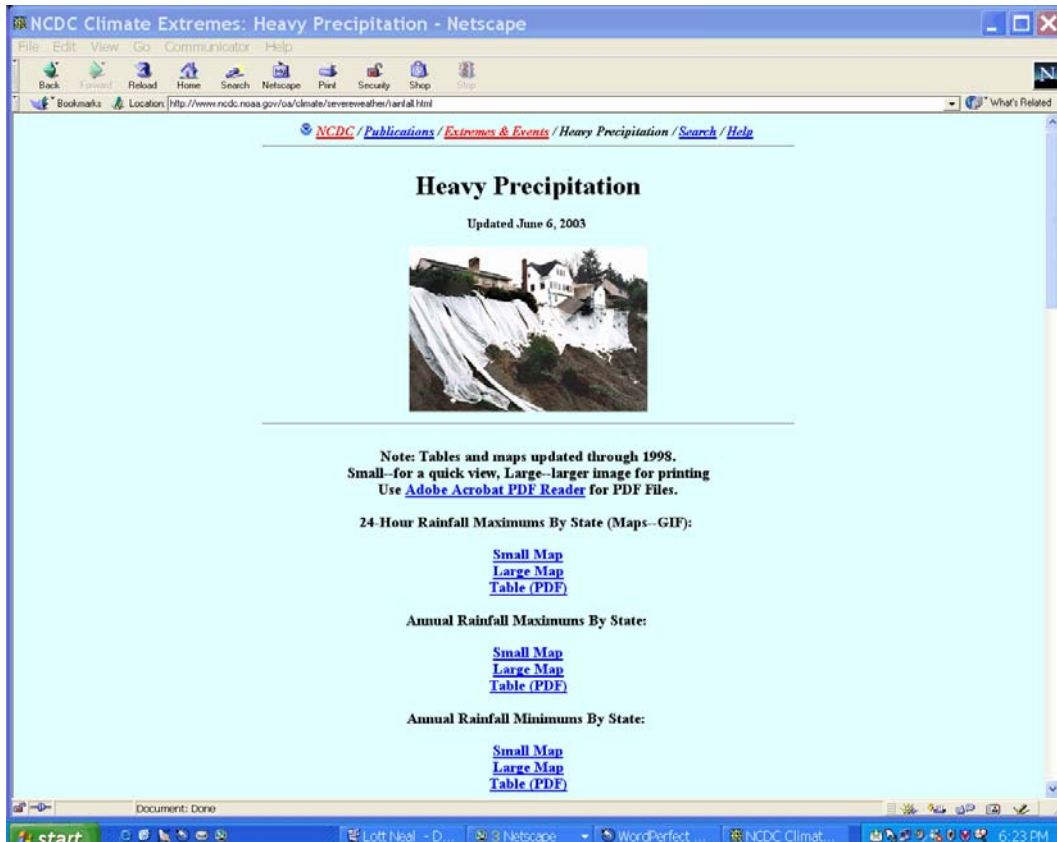
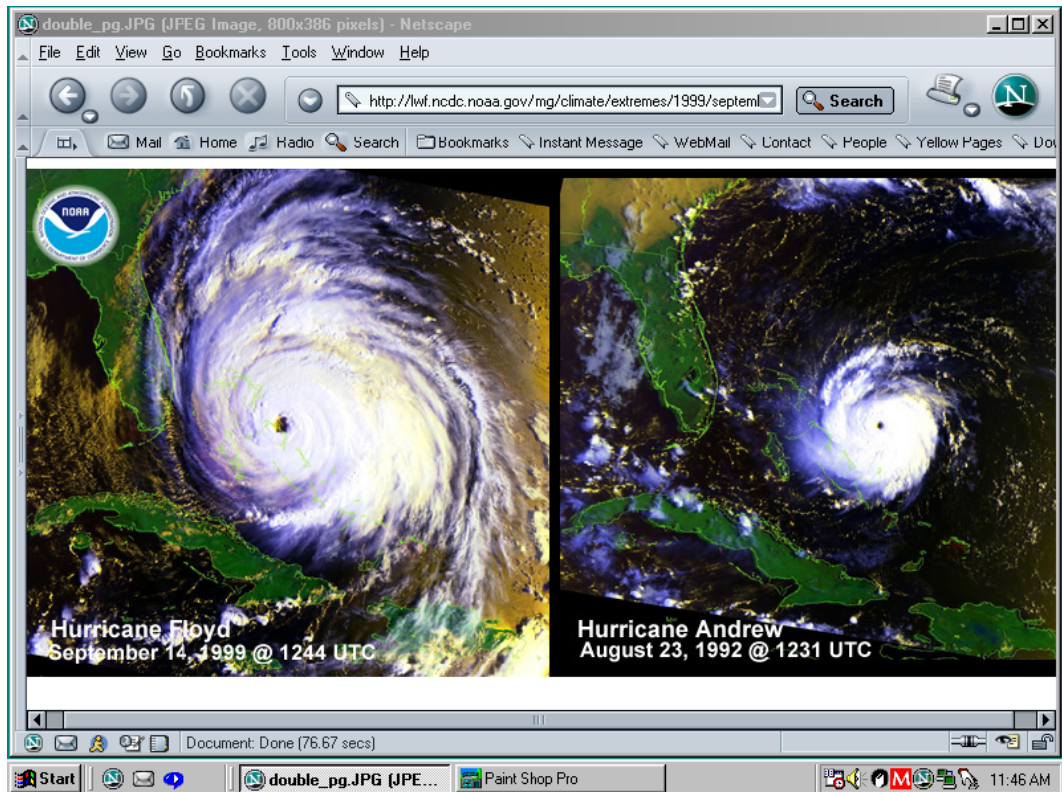
1901-2002 U.S. Landfalling Hurricanes (GIF & JPEG Maps):

	1901-1920	1921-1940	1941-1960	1961-1980	1981-1996	1950-2002
Atlantic & Gulf of Mexico	Small	Small	Small	Small	Small	Small
	Large	Large	Large	Large	Large	Large

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NCDC: Temperature Extremes - Netscape

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Temperature Extremes and Drought

Updated June 6, 2003



Temperature Extremes By State (GIF Maps and Tables):

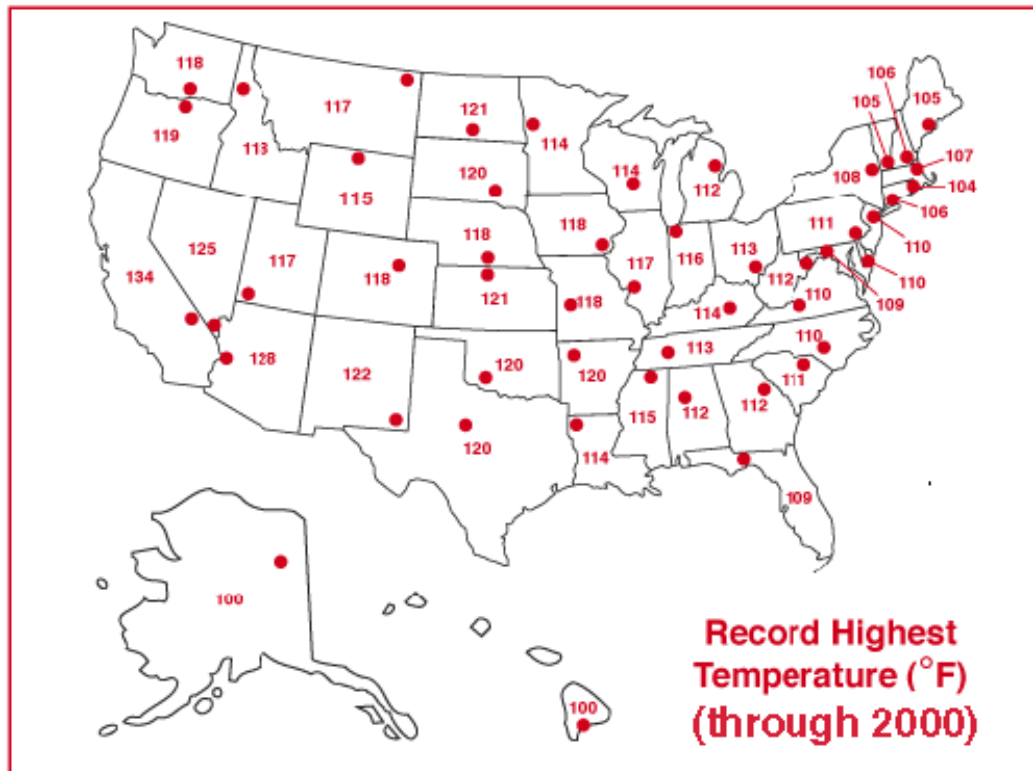
Small—for a quick view, Large—larger image for printing
 Note: State Extreme Tables and Maps updated through 2000

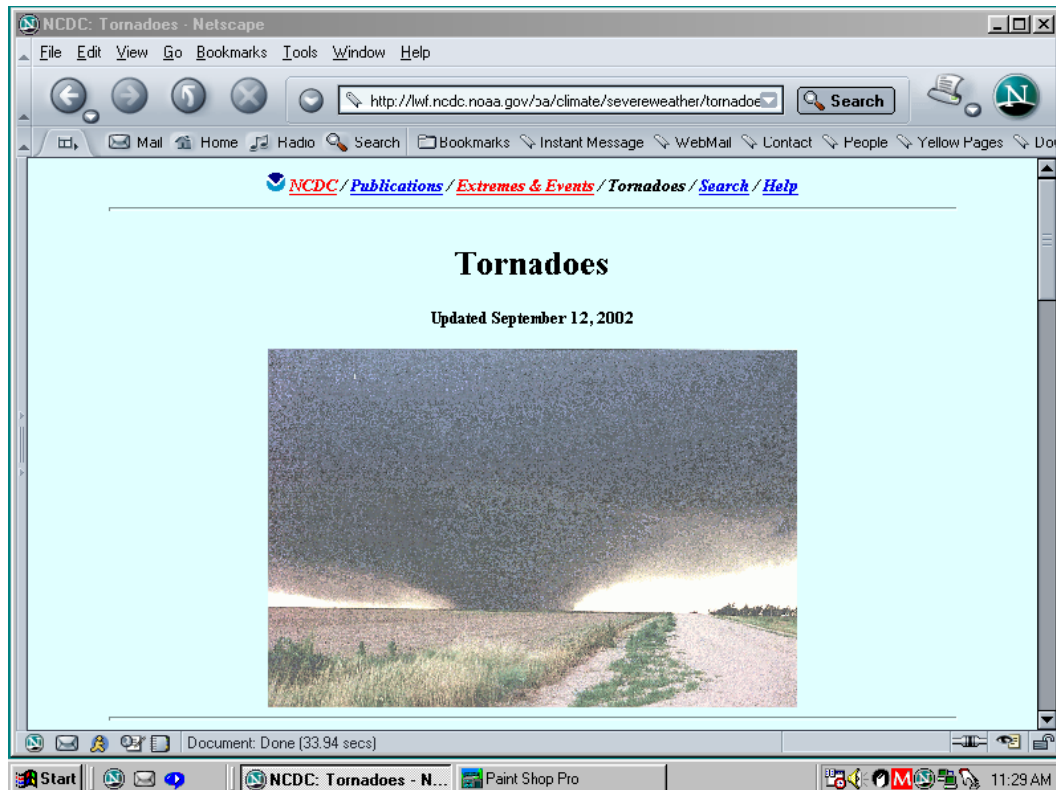
All-Time Temperature Maximums By State:
[Small Map](#)
[Large Map](#)
[Table \(PDF\)](#)

All-Time Temperature Minimums By State:
[Small Map](#)
[Large Map](#)
[Table \(PDF\)](#)

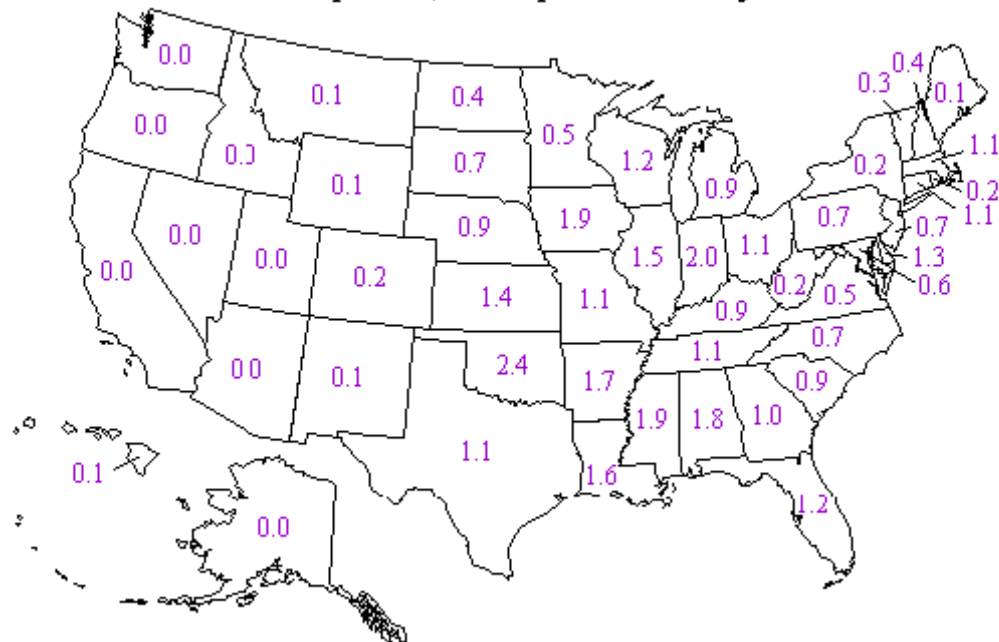
Monthly Temperature Minimums and Maximums By State:
[Table \(PDF\) \(2 pages listing all states\)](#)

start Lott Neal - D... NCDC: Temp... WordPerfect 1... 6:30 PM





Average Annual Number of Strong-Violent (F2-F5)
Tornadoes per 10,000 Square Miles by State



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TR 99-02, 1998 - 1999 Tornadoes and a Long Term U.S. Tornado Climatology Publication

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Free Copy: [TR 99-02, 1998-1999 Tornadoes and a Long-Term U.S. Tornado Climatology \(PDF File\)](#)
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Introduction

This report provides long-term climatological summaries and maps for tornadoes in the United States, with specific information concerning tornadoes during 1998-1999. The years 1998 and 1999 were quite active for tornadoes in the U.S., with well-above average numbers of fatalities. It is interesting to note that the winter-spring of 1998 was dominated by El Nino conditions, while the winter-spring of 1999 was dominated by La Nina, thus showing that active tornado seasons may occur in either situation. However, the 1998 season was much more active in the southeast, while 1999 saw a shift of activity farther west--very much as expected. Also, these 2 years produced a total of 3 tornadoes of F5 intensity and 11 tornadoes of F4 intensity, for a total of 14 in the violent F4-F5 category.

Download the PDF file (free) or add to shopping cart for the complete 22-page report.

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Worldwide Weather and Climate Events



Hurricane Mitch

- [2003](#)
- [2002, 2001, 2000](#)
- [1999, 1998, 1997](#)
- [1996, 1995, 1994](#)
- [1993, 1992, 1991](#)
- [Billion \\$\\$ Disasters](#)
- [International](#)
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- [Storm Events Database](#)
- [WWW Sites with Information](#)

(WWW Page Updated November 26, 2003)

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2003

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- [Global Hazards/Events, August 2003](#) (Europe Heatwave, China Flooding, TS Grace, etc)
- [Global Hazards/Events, July 2003](#) (Western Drought, Hurricane Claudette, Europe Heat, etc)
- [Global Hazards/Events, June 2003](#) (Huge Hailstones, TS Bill, Venezuela Flooding, etc)
- [Global Hazards/Events, May 2003](#) (US Tornado Outbreak, Southeast US Flooding, etc)

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NCDC: Climate of 2003: Global hazards and significant events - Netscape

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National Environmental Satellite, Data, and Information Service

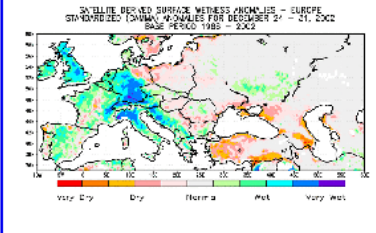
National Climatic Data Center

GLOBAL and U.S.

Hazards/Climate Extremes

Weekly Focus

Drought/Excessive Heat Flooding Severe Storms Tropical Cyclones Extratropical Cyclones Severe Winter Weather



Global Impacts for January 1-2, 2003
(Page last updated January 2, 2003)

A series of storm systems affecting much of western Europe, from the United Kingdom into the Netherlands, produced heavy rainfall and flooding during the opening days of 2003. [Additional information](#) can be found below.

[Flooding Rains Affect Western Europe](#)

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NCDC: Global Measured Extremes of Temperature and Precipitation - Netscape

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Bookmarks Location: http://www.ncdc.noaa.gov/ol/climate/globalextremes.html What's Related

Global Measured Extremes of Temperature and Precipitation



World Map with Extremes Plotted

Temperature Extremes shown in **RED**

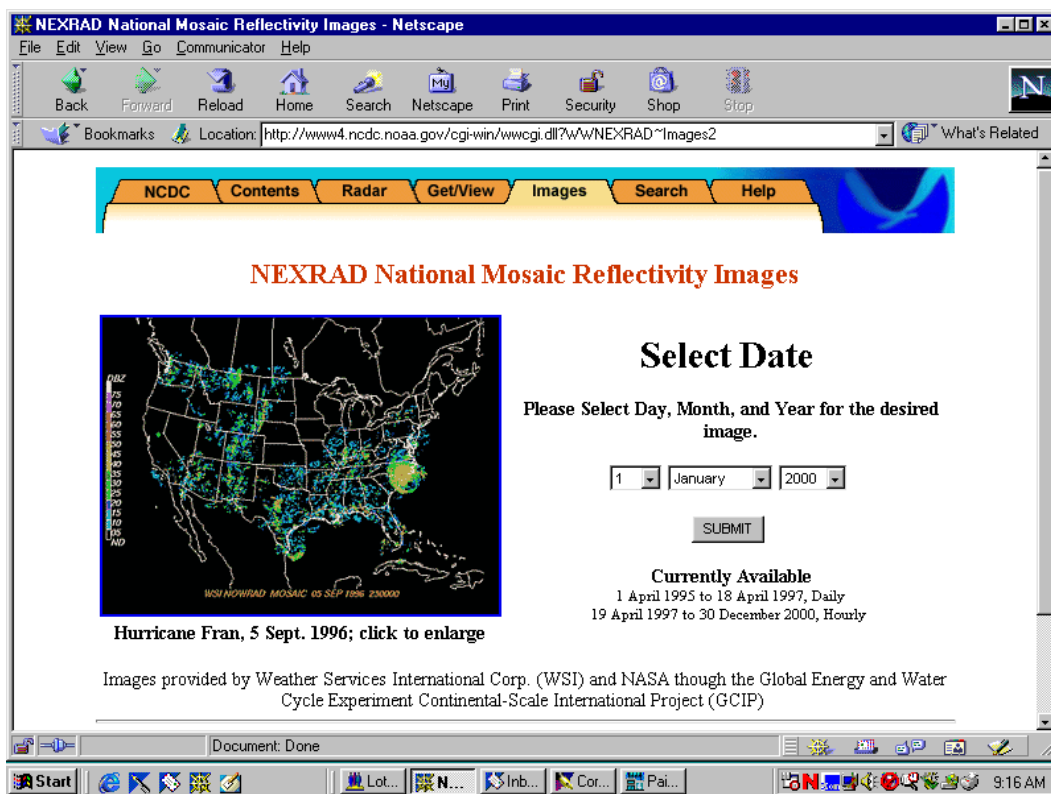
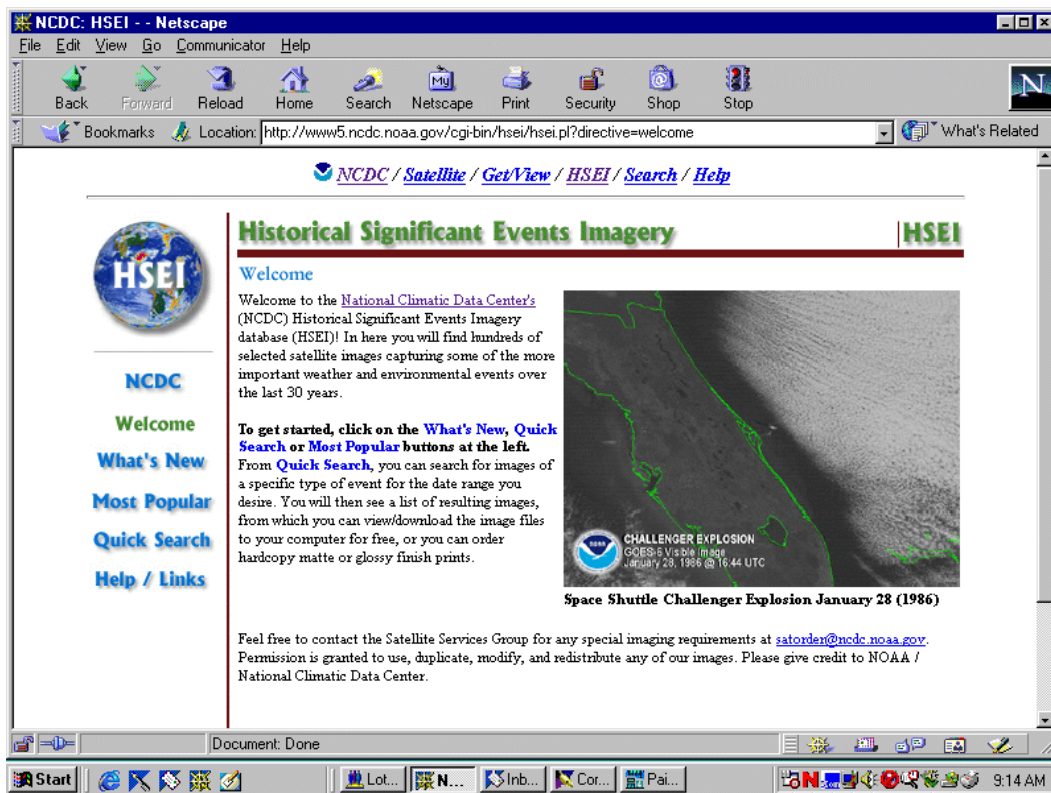
- [Highest Temperatures](#)
- [Lowest Temperatures](#)

Precipitation Extremes shown in **ORANGE**

- [Highest Average Precipitation](#)
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NCDC: Billion Dollar U.S. Weather Disasters - Netscape

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National Oceanic and Atmospheric Administration

Billion Dollar U.S. Weather Disasters, 1980-2003

National Climatic Data Center - October 10, 2003



• [Narrative](#)

• [Chronological List](#)

• [Global Historical Extremes](#)

• [El Nino/La Nina](#)

• [Technical Report \(PDF\)](#)

Synoptic Map of Billion Dollar U.S. Weather Disasters--1980-2003
(Click on the image for a larger view- print in landscape mode.)

Billion Dollar U.S. Weather Disasters

The National Climatic Data Center (NCDC) is the "Nation's Scorekeeper" in terms of addressing severe weather events in their historical perspective. As part of its responsibility of "monitoring and assessing the climate," NCDC tracks and evaluates climate events in the U.S. and globally that have great economic and societal impacts. NCDC is frequently called upon to provide summaries of global and US temperature and precipitation trends, extremes, and comparisons in their historical perspective.

This web page/report describes those events that have had the greatest economic impact since 1980. The authors (Ross and Lott) have also written a paper (PDF version), ["A Climatology of Extreme Weather and Climate Events"](#), which provides a climatology of these events, and relates the events to population/societal trends and climate change.

NCDC: Global Climate Change - Netscape

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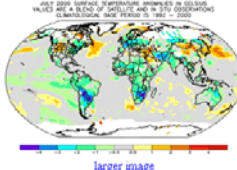
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Global Climate Change

Updated 23 July 2003



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Events, Reports, and Publications

[Testimony of NCDC Director Thomas R. Karl at US Senate Hearing on Climate Change \(Web Page\)](#)

[Evaporation Changes over the US and the Former USSR: A Reassessment \(Paper, PDF\)](#)

[Precipitation Trends Over the Russian Permafrost-free Zone \(Paper, PDF\)](#)

[Observed Variability and Trends in Extreme Climate Events \(Paper, PDF\)](#)

[Temporal Changes in the Relationship Between Cloud Cover and Temperature \(Paper, PDF\)](#)

[Changes in the Probability of Heavy Precipitation \(Paper, PDF\)](#)

[Recent Changes in Cloud Type Frequency and Convective \(Paper, PDF\)](#)

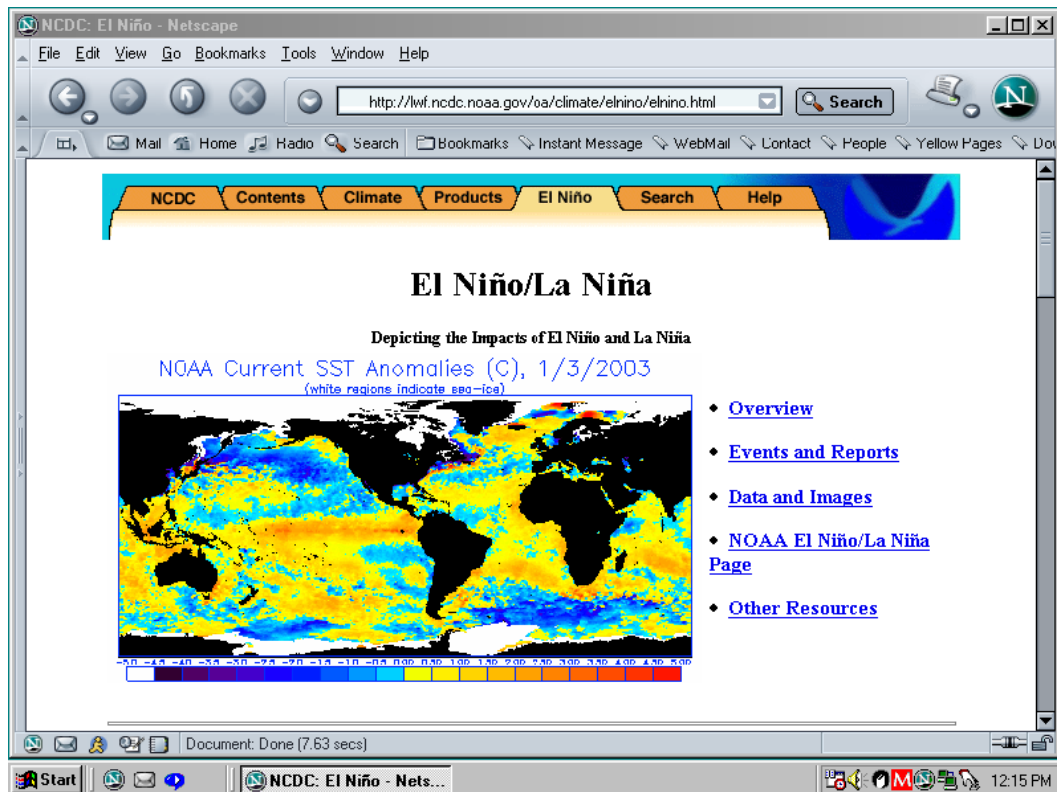
[Heavy Precipitation and High Streamflow in the Contiguous U.S. \(Paper, PDF\)](#)

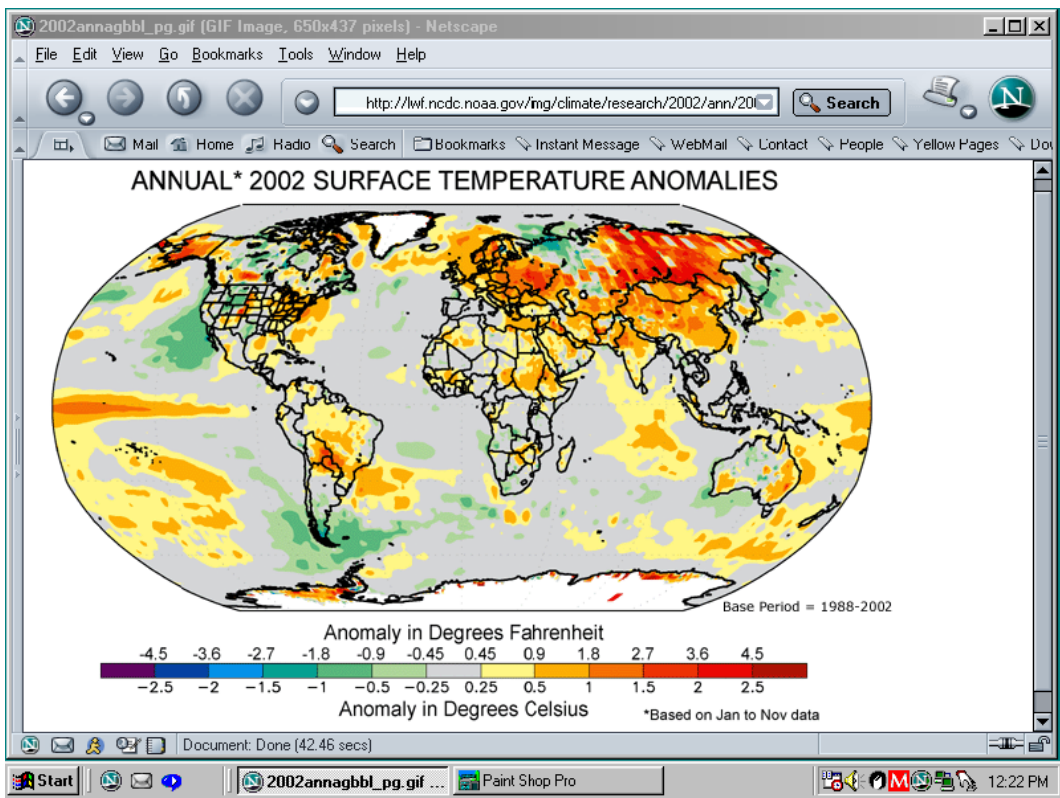
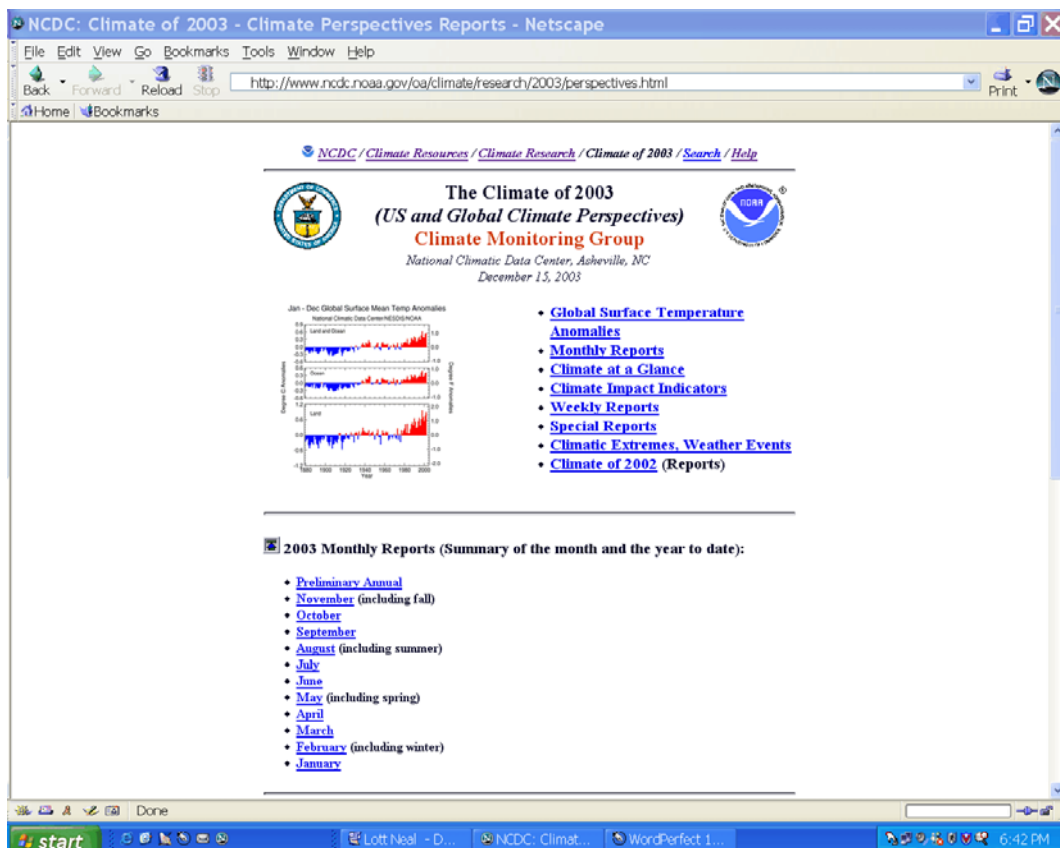
[The Relationship of Cloud Cover to Near-Surface Temperature and Humidity \(Paper, PDF\)](#)

[Temperature Time Series for China, India, & the U.S. \(Web Page\)](#)

[Global Warming Frequently Asked Questions \(Web Page\)](#)

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NCDC: President Bush Visits NOAA - Netscape

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President Bush Visits NOAA

14 February 2002



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[US Statewide Temperature & Precipitation Ranks](#)
[Heating Degree Days and REDTI](#)
[Mean Annual US Precipitation](#)
[Current PHDI & Precipitation Needed to End Drought](#)
[Billion Dollar Climate and Weather Disasters](#)

President Bush Visits NOAA

President Bush announced a new global climate change initiative during an address at the Commerce Department's National Oceanic and Atmospheric Administration (NOAA) Science Center, February 14. President Bush...

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NCDC: US Climate at a Glance - Netscape

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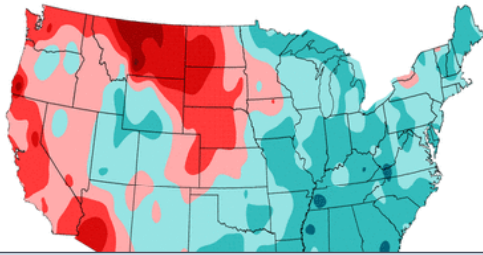
NCDC / Climate Monitoring / Climate At A Glance / Search / Help

National Oceanic and Atmospheric Administration

U.S. Climate at a Glance

National Climatic Data Center
Asheville, North Carolina

November 2002 Temperature Departure from Normal
(Departure from the 1971 - 2000 Normal)

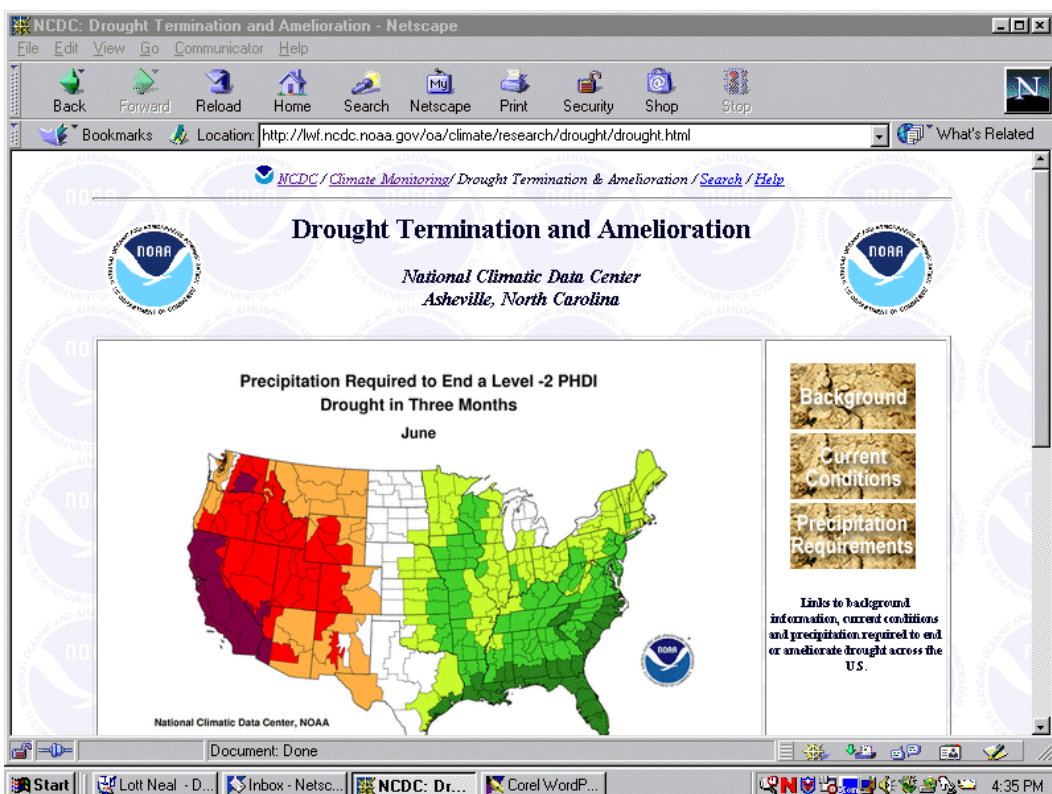
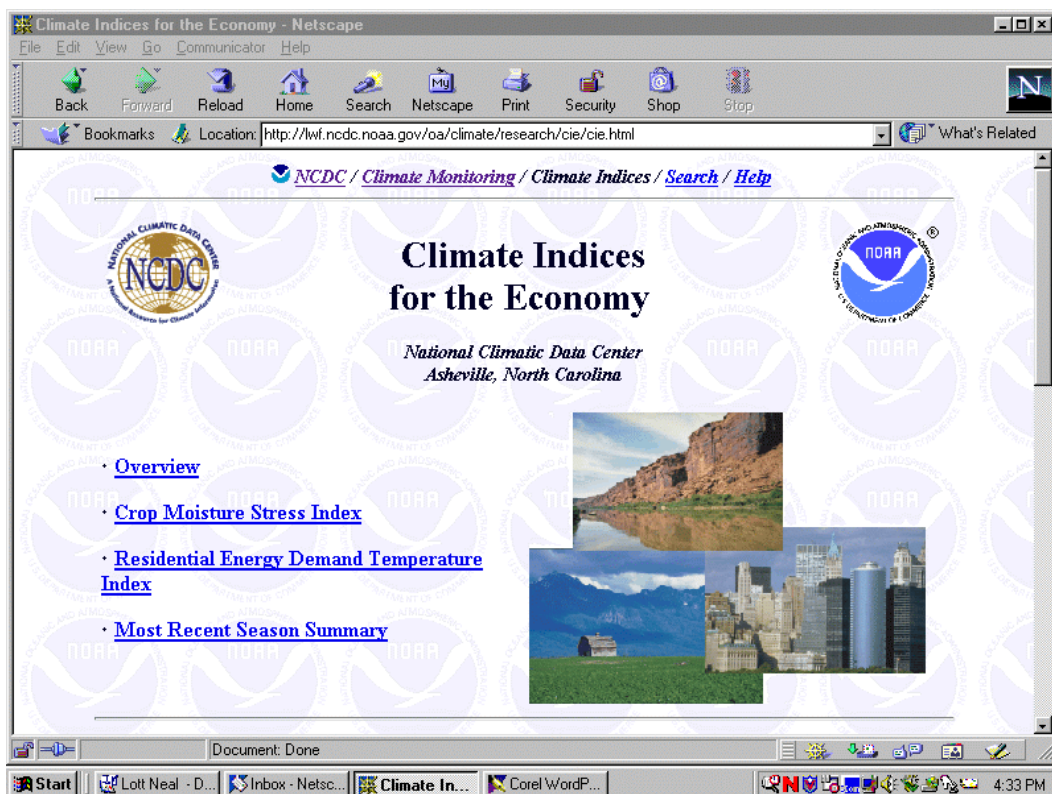


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Links to current and historical temperature and precipitation data

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NCDC: Animated Indicator Maps for Drought Monitor - NCDC - Netscape

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Bookmarks Location: <http://lwf.ncdc.noaa.gov/oa/climate/research/dm/weekly-DM-animations.html> What's Related

NCDC / [Climate Monitoring](#) / [Monitor](#) / [Search](#) / [Help](#)



Animated Indicator Maps for Drought Monitor

National Climatic Data Center



The [Drought Monitor](#) is an interagency drought monitoring tool that is issued weekly.

Drought Monitor Animation: [6-week](#) or [12-week](#)

This page has been created to help in the preparation of the Drought Monitor. *(The graphics linked to from this page are operational products produced by several different organizations and agencies. The quality control applied to these graphics varies from graphic to graphic and some of the graphics are experimental.)*

Some of the indicators that are examined to produce the Drought Monitor include the following:

Indicators Analyzed to Prepare the Drought Monitor Product

Source	Animated Maps
USGS	Daily Streamflow for Current Month Daily Streamflow for Previous Month 7-Day Average Streamflow

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NCDC: U.S. Snow Monitoring - Netscape

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U.S. Snow Monitoring

(Data made available primarily through the Cooperative Observer Network)

National Climatic Data Center
Asheville, North Carolina



We are currently experiencing technical difficulties with the snow monitoring pages and hope to have this problem rectified shortly. We are sorry for any inconvenience this may cause.

- [Recent Snowfall & Snowdepth](#)
- [Month & Season-to-Date Snowfall](#)
- [Maximum Daily Snow](#)
- [Number of Days with Snow](#)
- [View Data Files](#) (for past 7 days)
- [View Image Files](#) (for past 7 days)



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NCDC: Daily US Maps - Netscape

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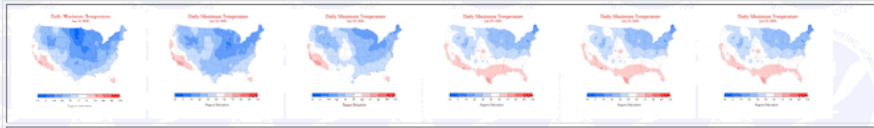
NCDC / Climate Monitoring / Daily U.S. ASOS Maps / Search / Help

Daily US Maps

Based on Raw Data from the
US ASOS Network

Data have not been quality controlled

National Climatic Data Center
Asheville, North Carolina



Select from these options and then click "submit" to view maps of daily data throughout the U.S.
These products are experimental. Additional data types will be added in the near future.
***Dot maps are available for departures only**

Data Type: Format: 2001 April Day

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4:40 PM

NCDC: Global Surface Temperature Anomalies - Netscape

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National Oceanic and Atmospheric Administration

Global Surface Temperature Anomalies



[larger image](#)

- [Overview](#)
- [An Operational Near Real Time Global Temperature Index](#)
- [Global Long-term Mean Land and Sea Surface Temperatures](#)
- [The Global Anomalies and Index](#)

Overview

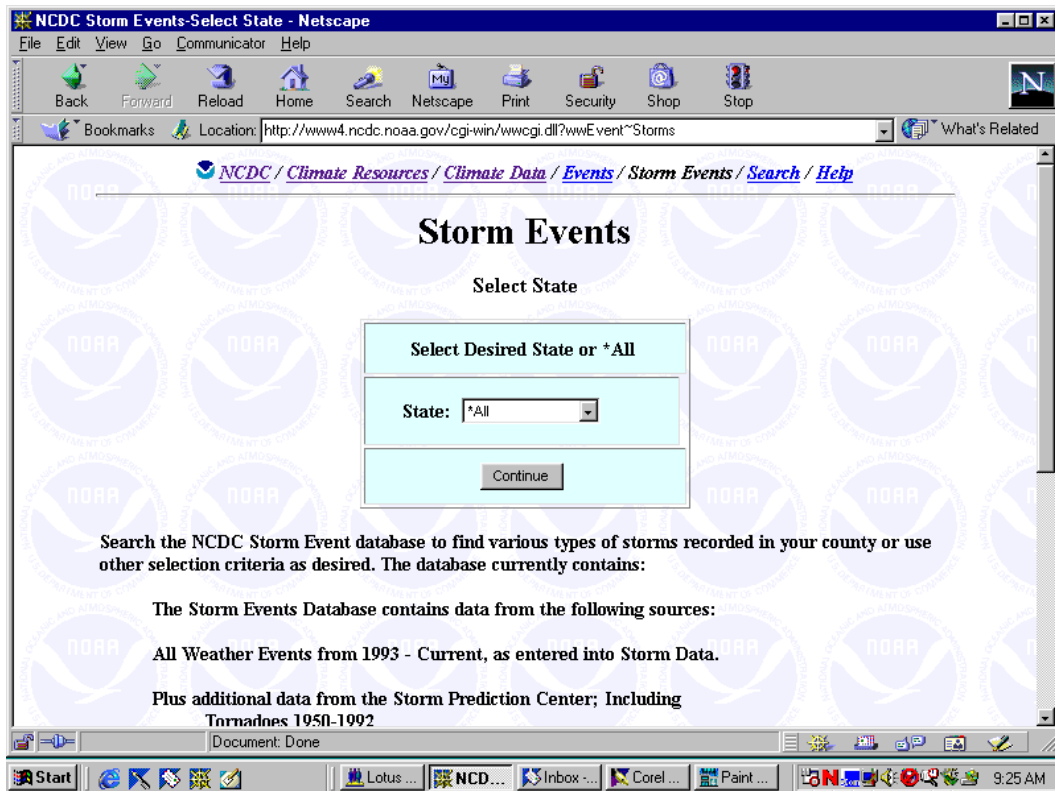
NCDC's long-term mean temperatures for the Earth were calculated by processing data from thousands of world-wide observation sites on land and sea for the entire period of record of the data. Many parts of the globe are inaccessible and therefore have no data. The temperature anomaly time series presented here were calculated in a way that did not require knowing the actual mean temperature of the Earth in these inaccessible areas such as mountain tops and remote parts of the Sahara Desert where there are no regularly reporting weather stations. Using the collected data available, the whole Earth long-term mean temperatures were calculated by interpolating over uninhabited deserts, inaccessible Antarctic mountains, etc. in a manner that takes into account factors such as the decrease in temperature with elevation. By adding the long-term monthly mean temperature for the Earth to each anomaly value, one can create a time series that approximates the temperature of the Earth and how it has been changing through time.

An Operational Near Real Time Global Temperature Index

Robert G. Quayle, Thomas C. Peterson, Alan N. Rasmus, and Catherine S. Godfrey
National Climatic Data Center (NCDC), NOAA/NESDIS, Asheville, N.C.

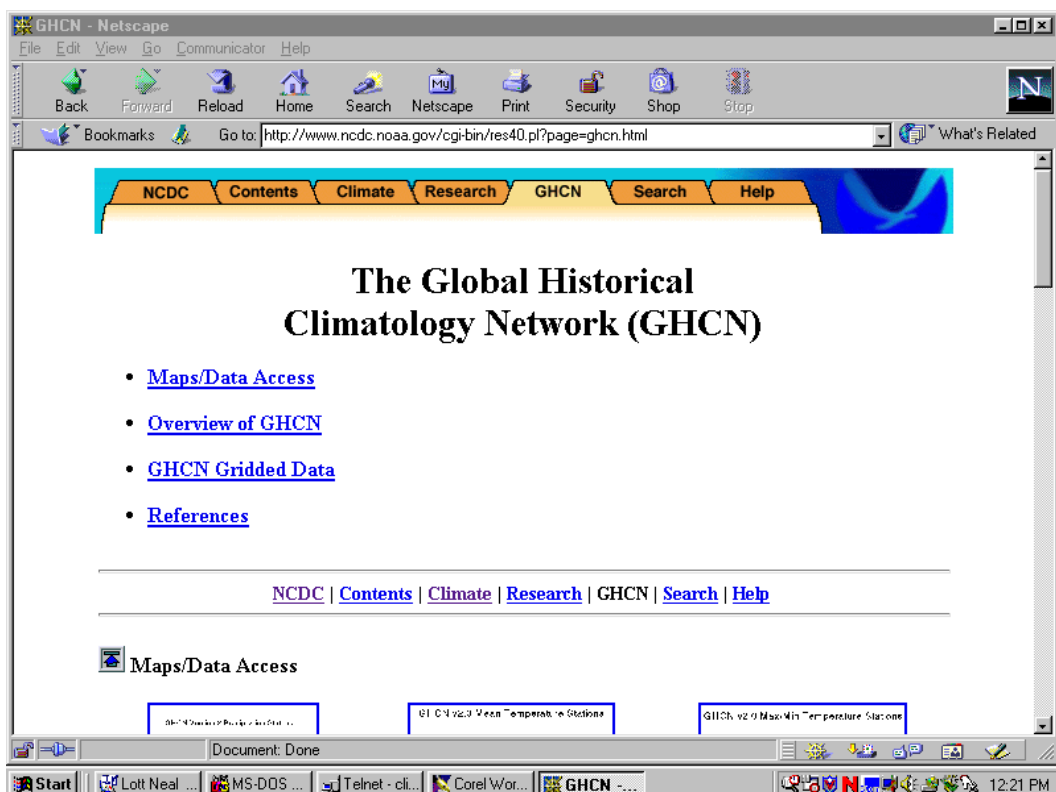
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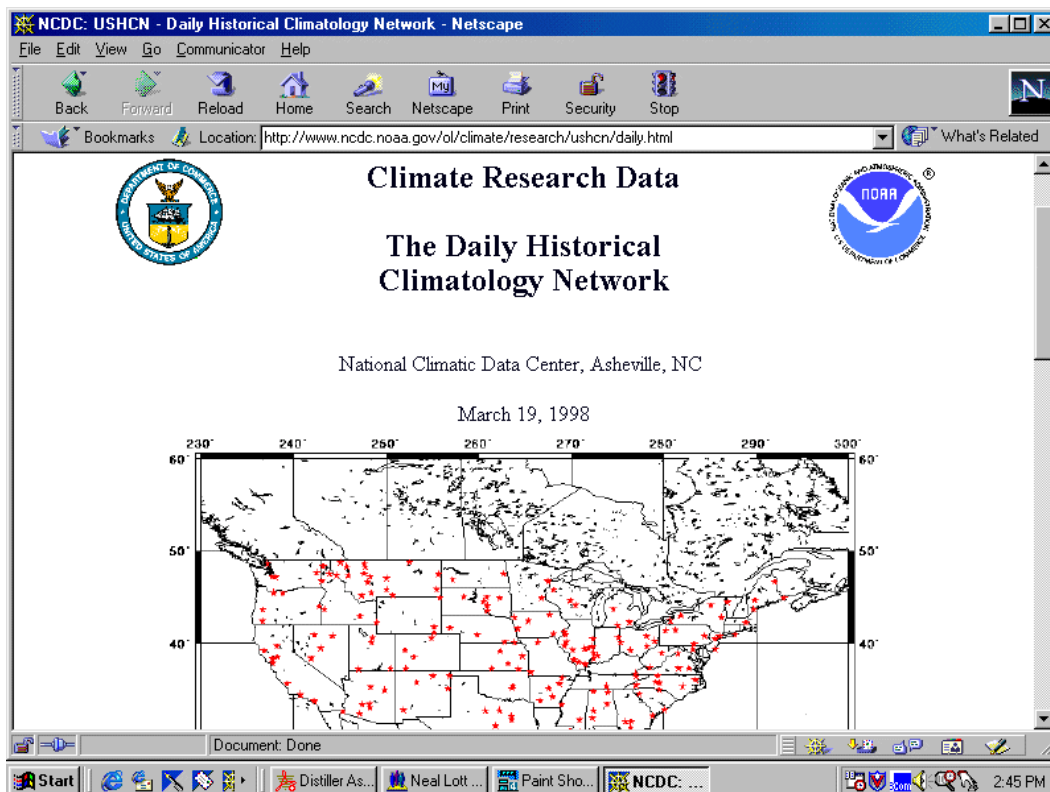
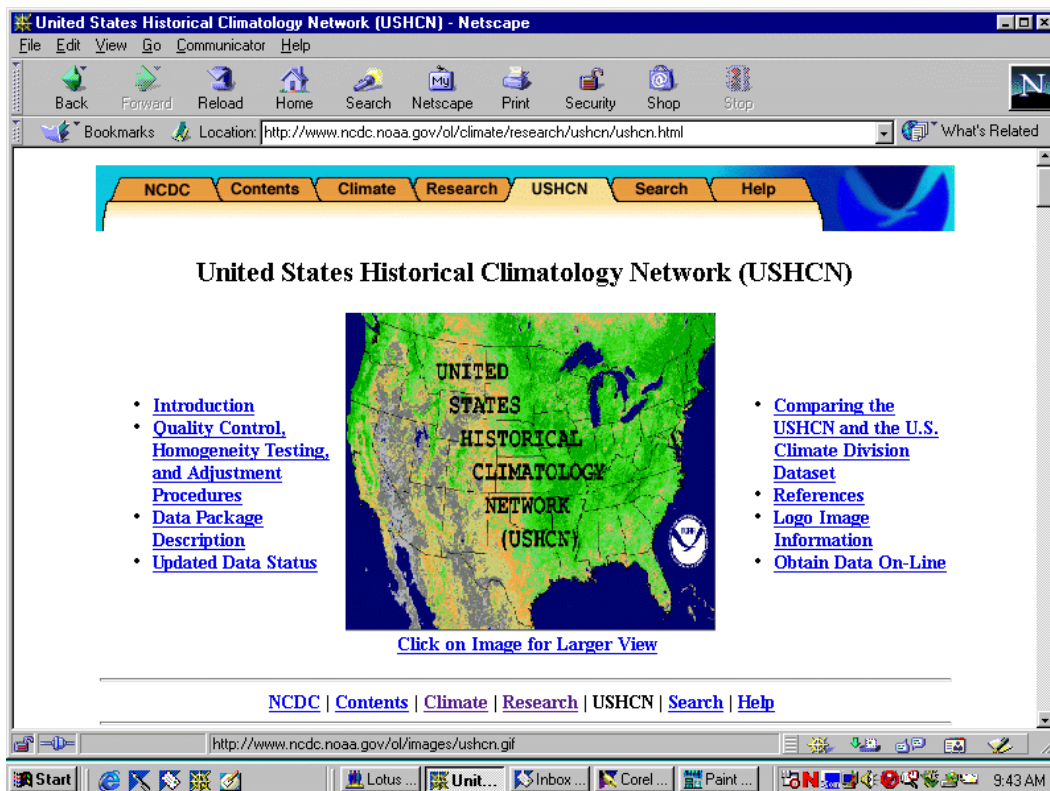
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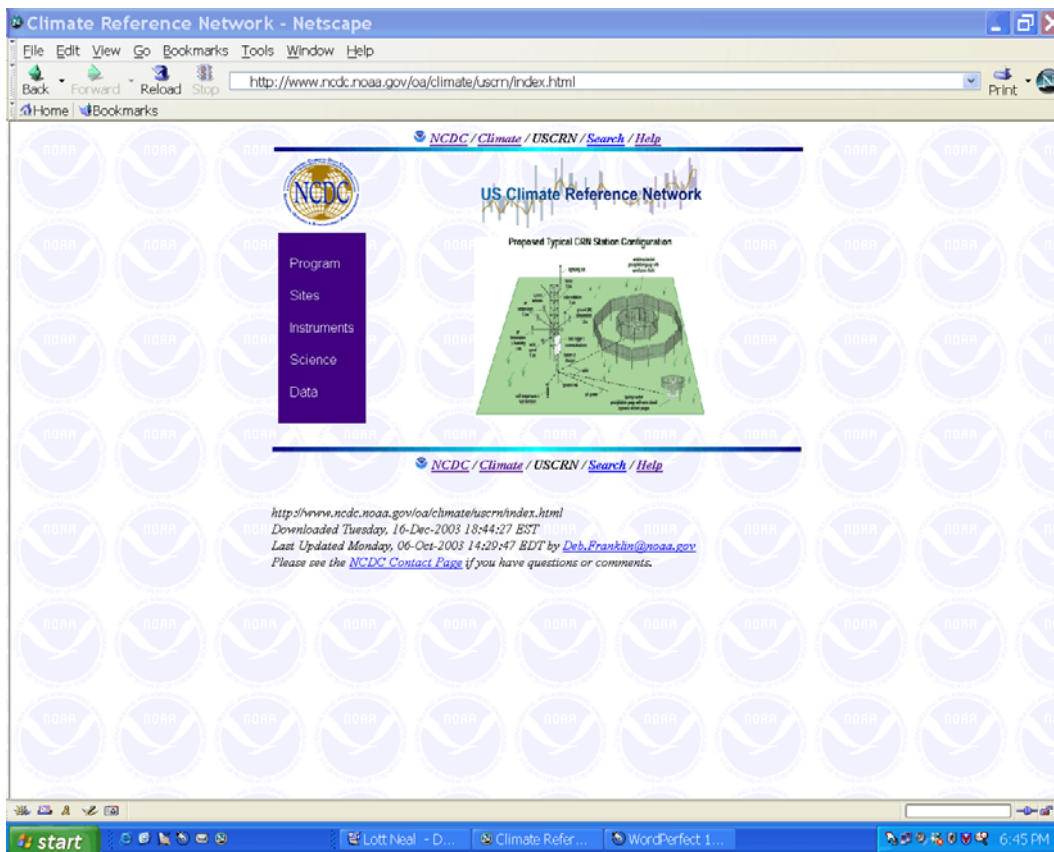
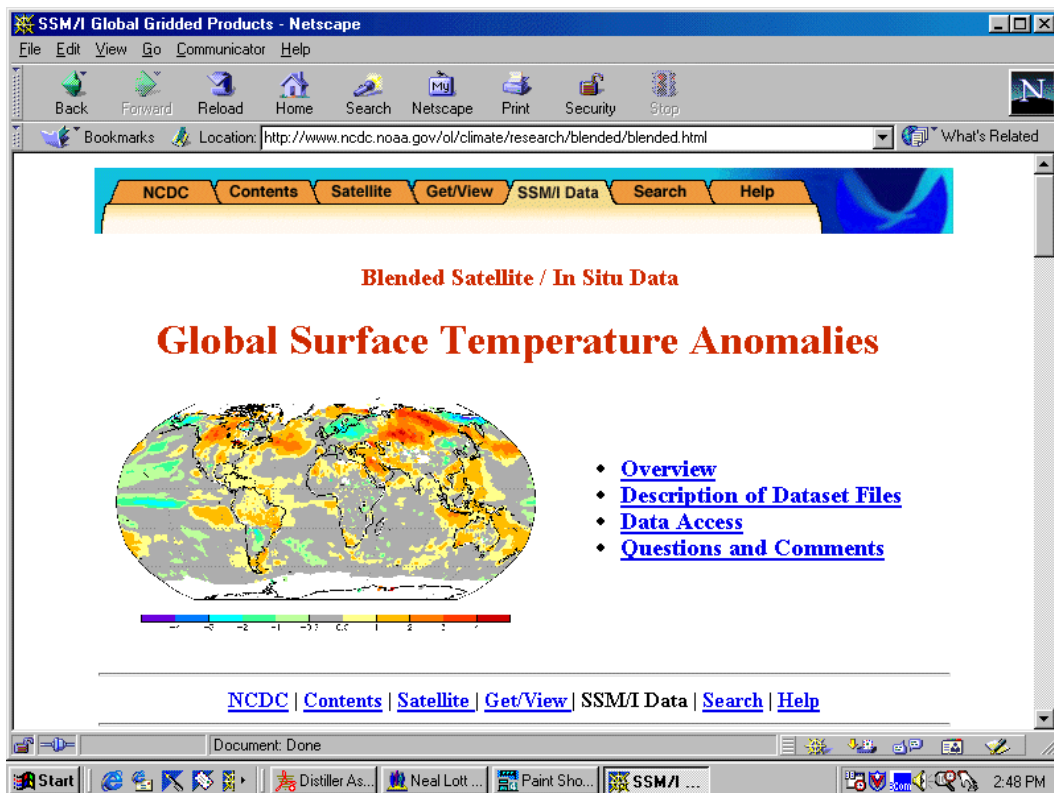


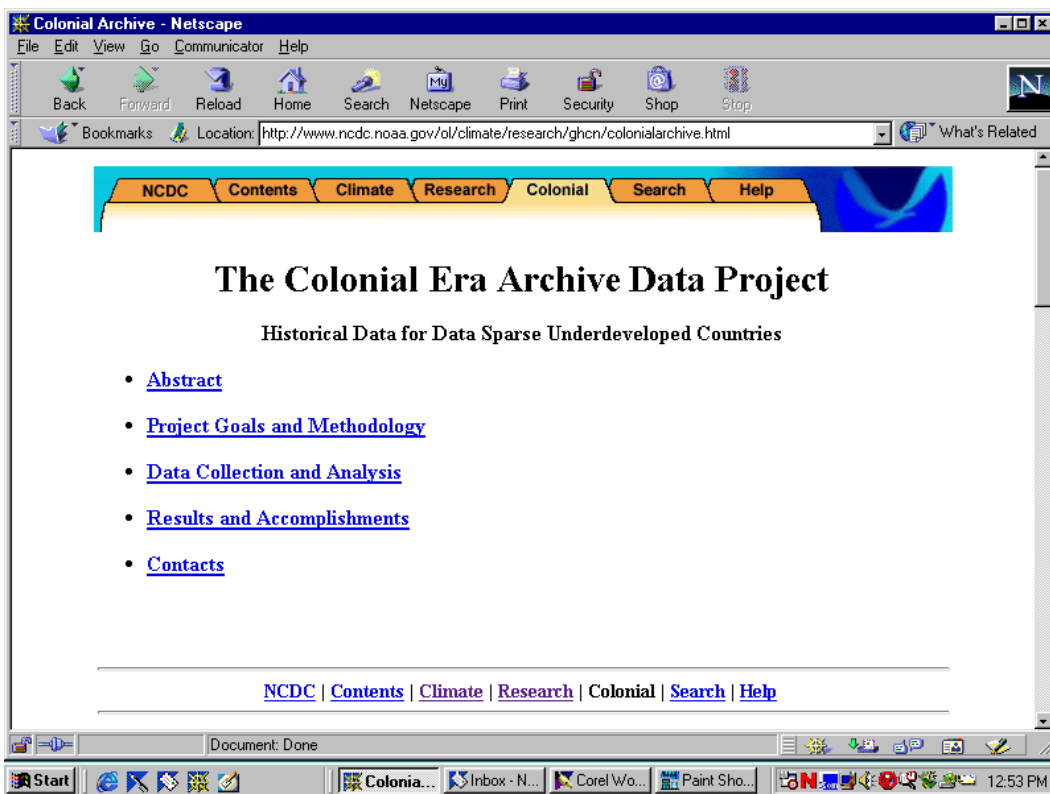
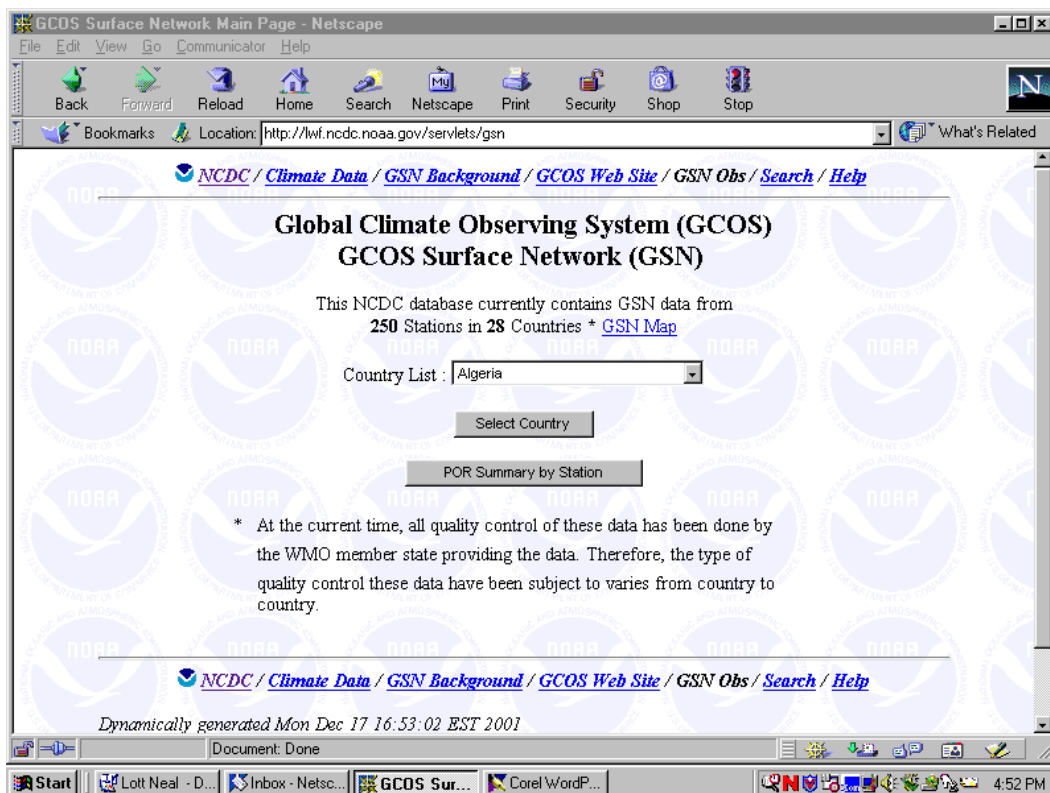
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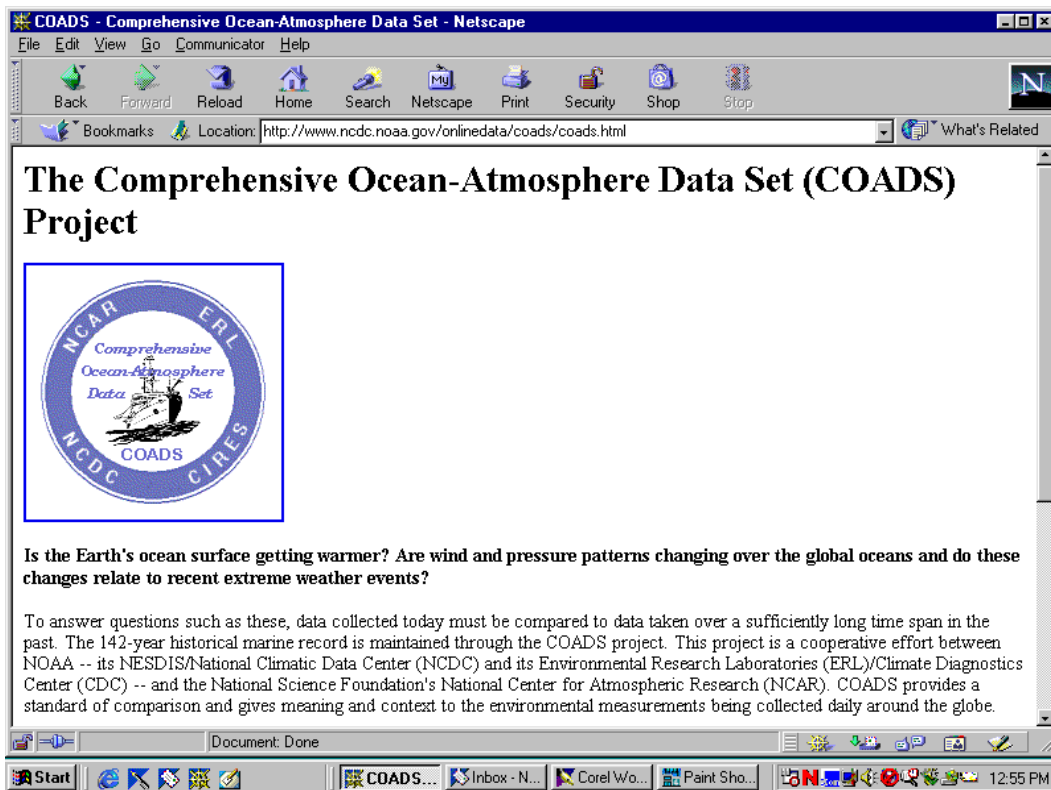
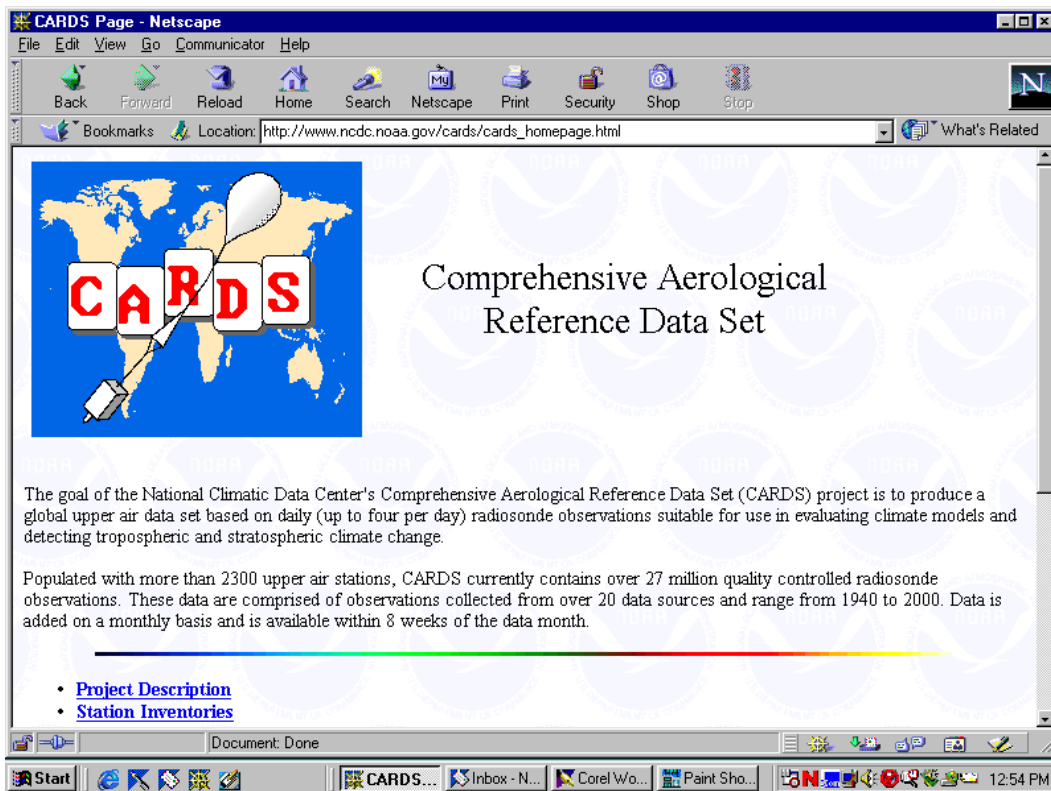
Numerous research programs and datasets....

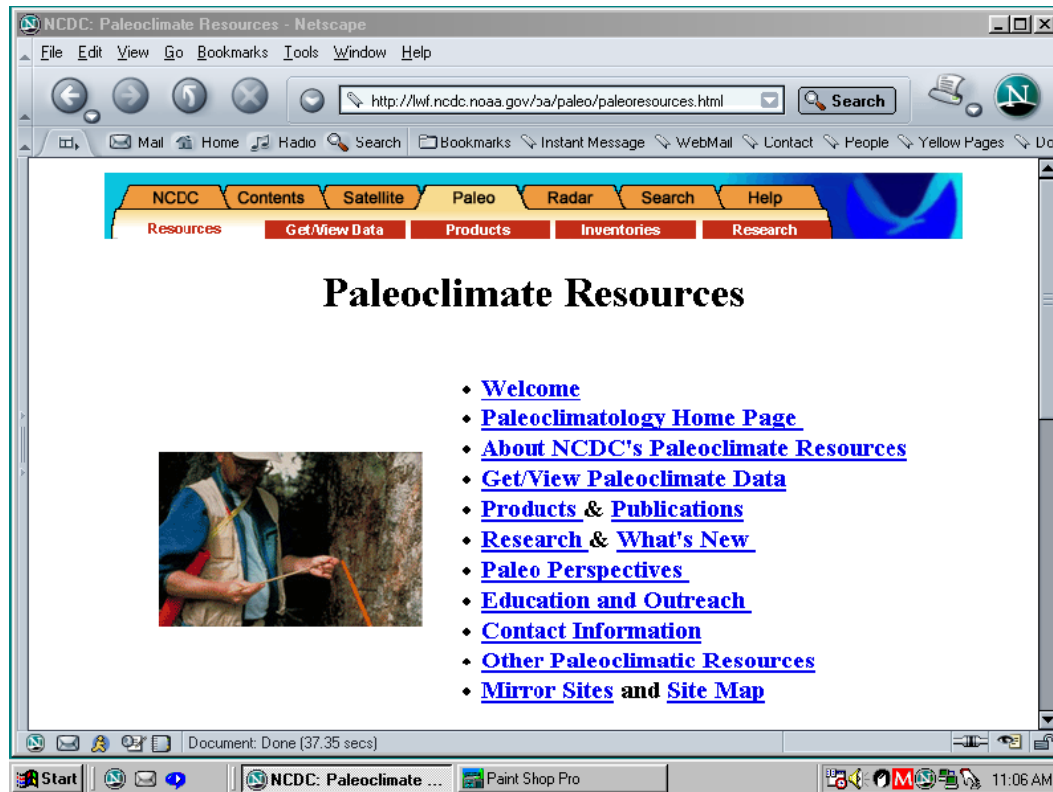
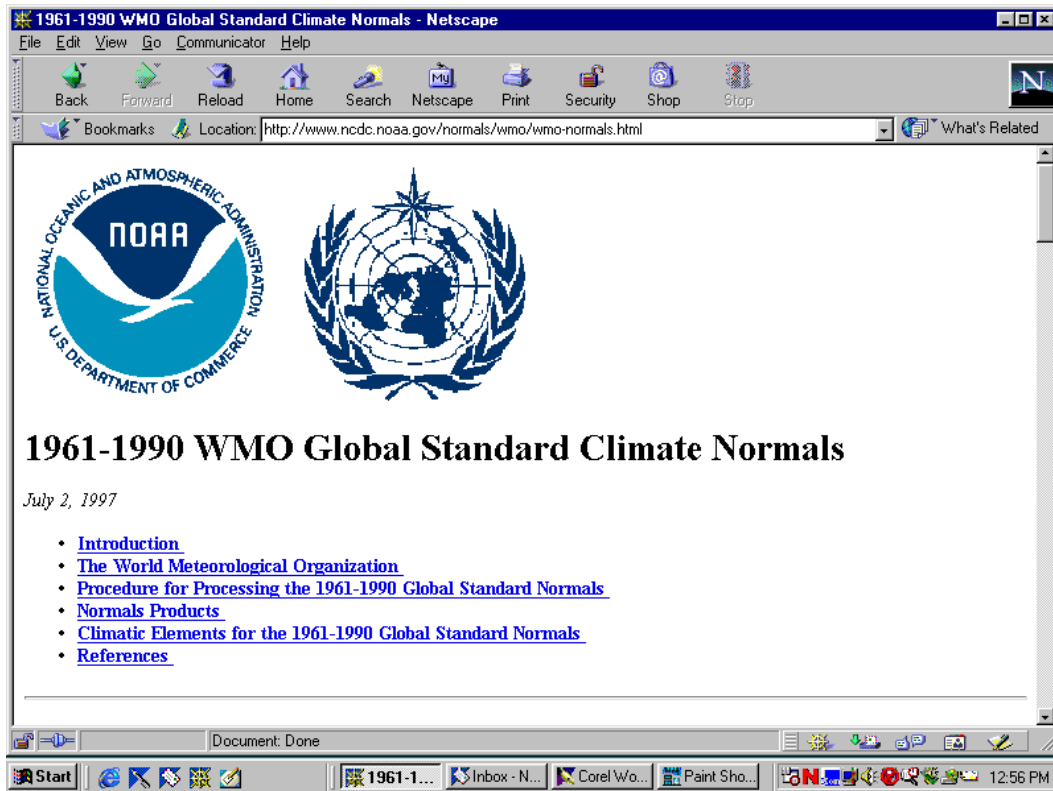












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Numerous online publications, many of which are free of charge....

The screenshot shows the NCDC Climate Products website in a Netscape browser window. The browser's address bar displays the URL: <http://www.ncdc.noaa.gov/ol/climate/climateproducts.html>. The website features a navigation bar with links to NCDC, Contents, Satellite, Climate, Radar, Search, and Help. Below this, there are links to Resources, Get/View Data, Products, Inventories, and Research. The main heading is "Climate Products & Publications". To the left of the main content is an image showing various climate data products, including maps and documents. To the right of the image is a list of links: Products: [CDROMs](#) | [Specialized](#) | [Digital Data](#); Climatic Reports, Papers, and Summaries; Publications; Products & Services Guide; Bibliography; Online Store; and Ordering NCDC Data & Products. At the bottom of the page, there are links to NCDC, Contents, Satellite, Climate, Radar, Search, and Help, along with a link to Resources.

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<http://www.ncdc.noaa.gov/ol/climate/climateproducts.html#PUBS>

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2001

JOURNAL ARTICLES:

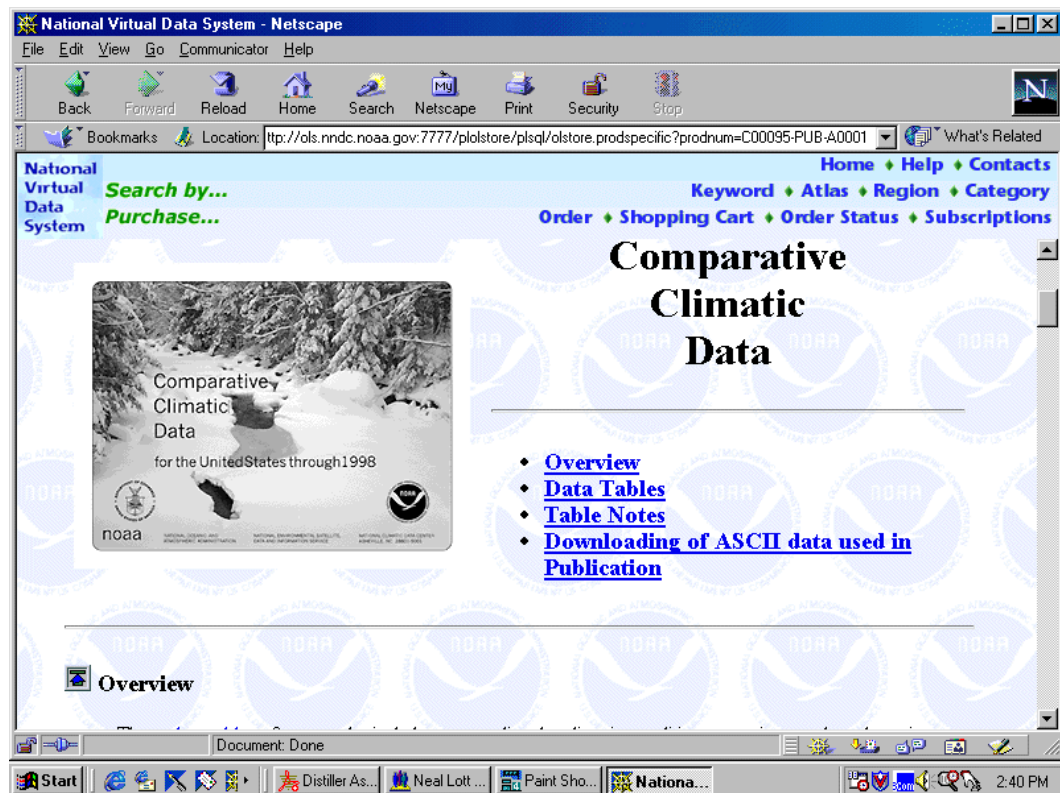
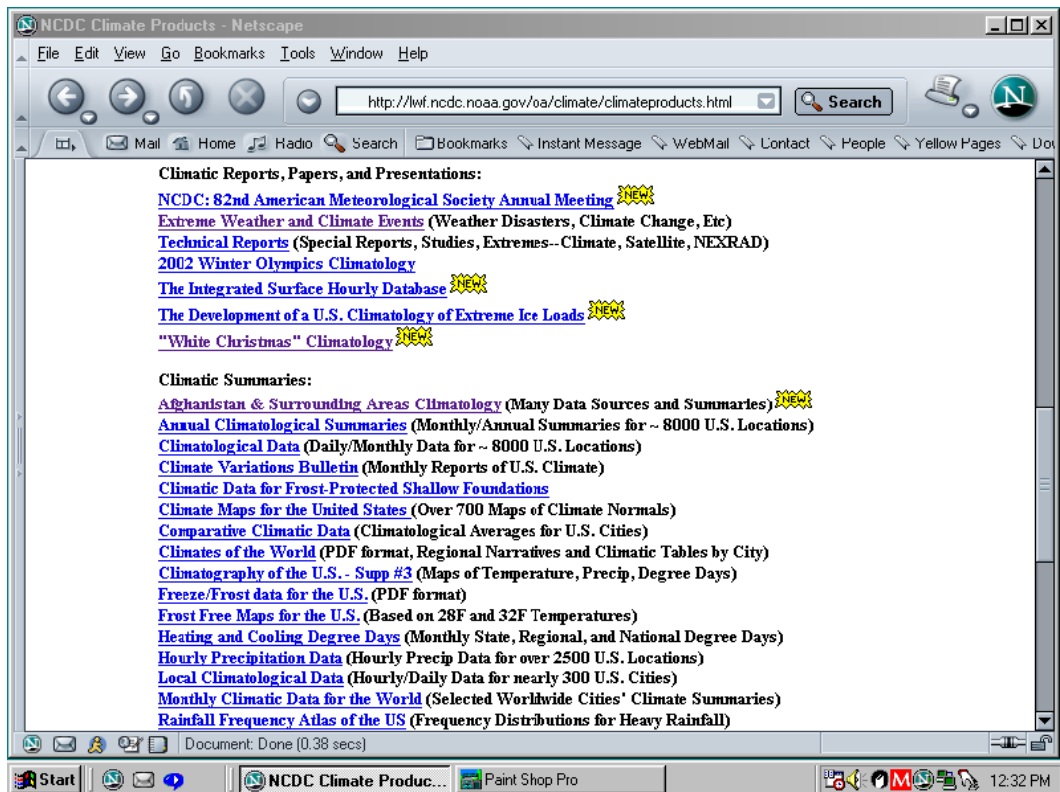
Chernykh, I. O. Alduchov, and R.E. Eskridge, 2001: Trends in low and high cloud boundaries and errors in height determination of cloud boundaries. *Bulletin of the American Meteorological Society*, 82, 1941-1947.

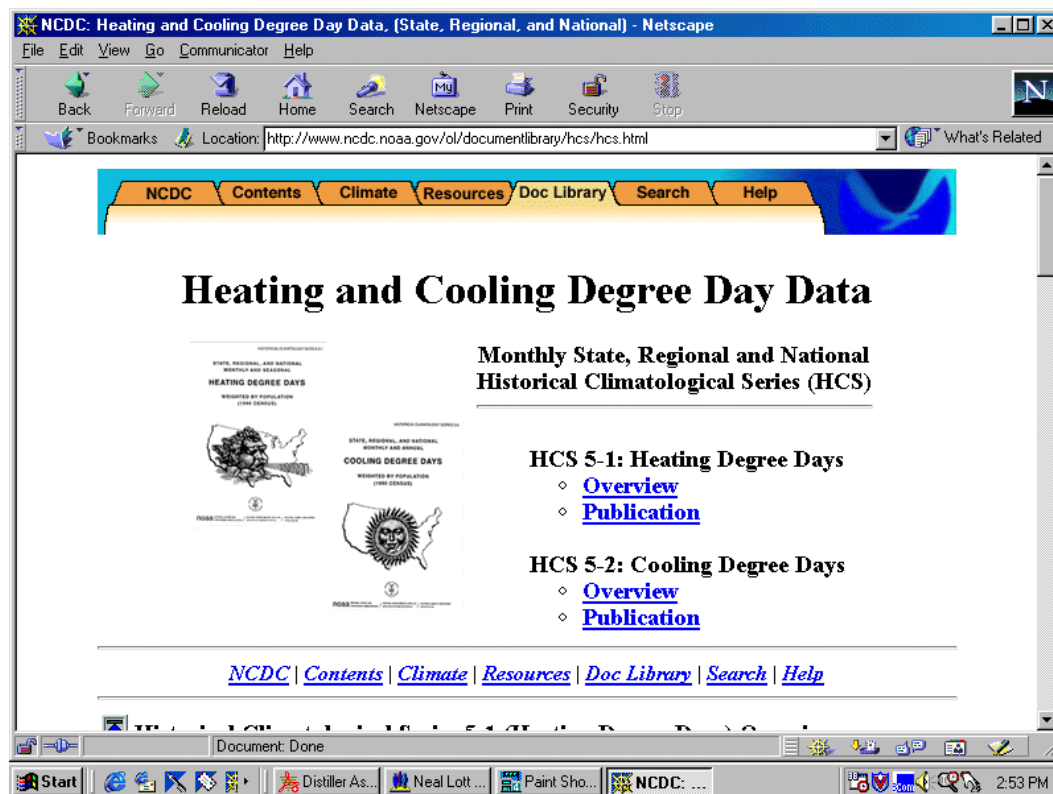
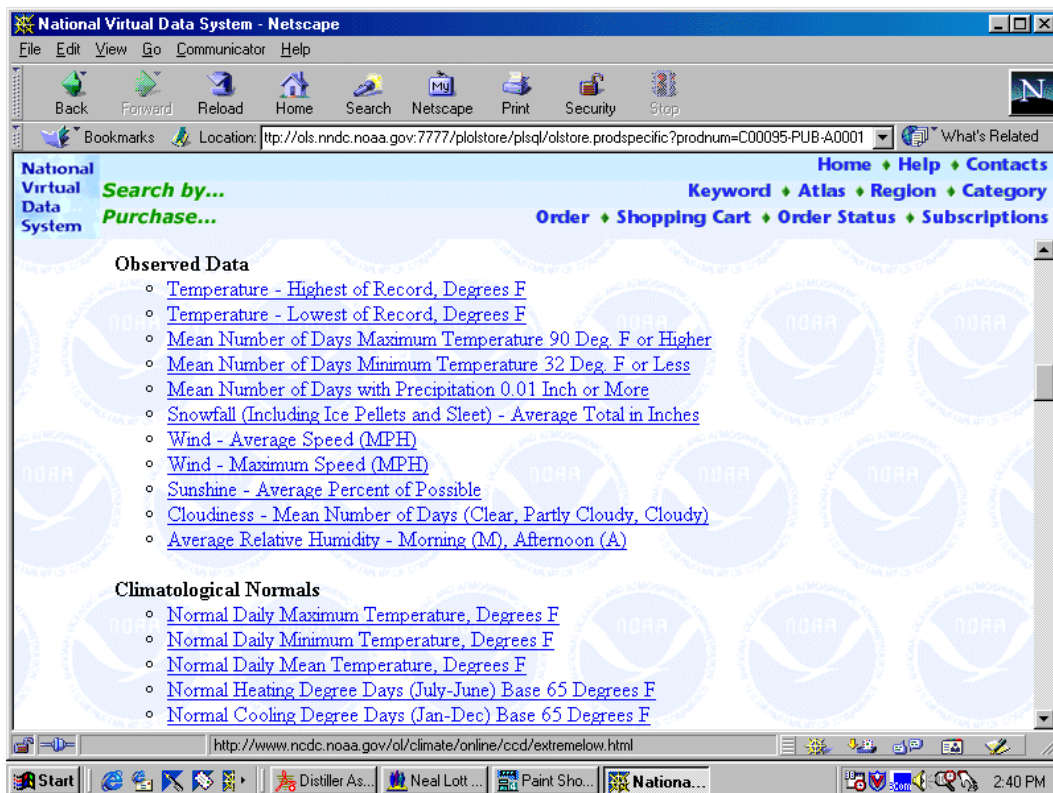
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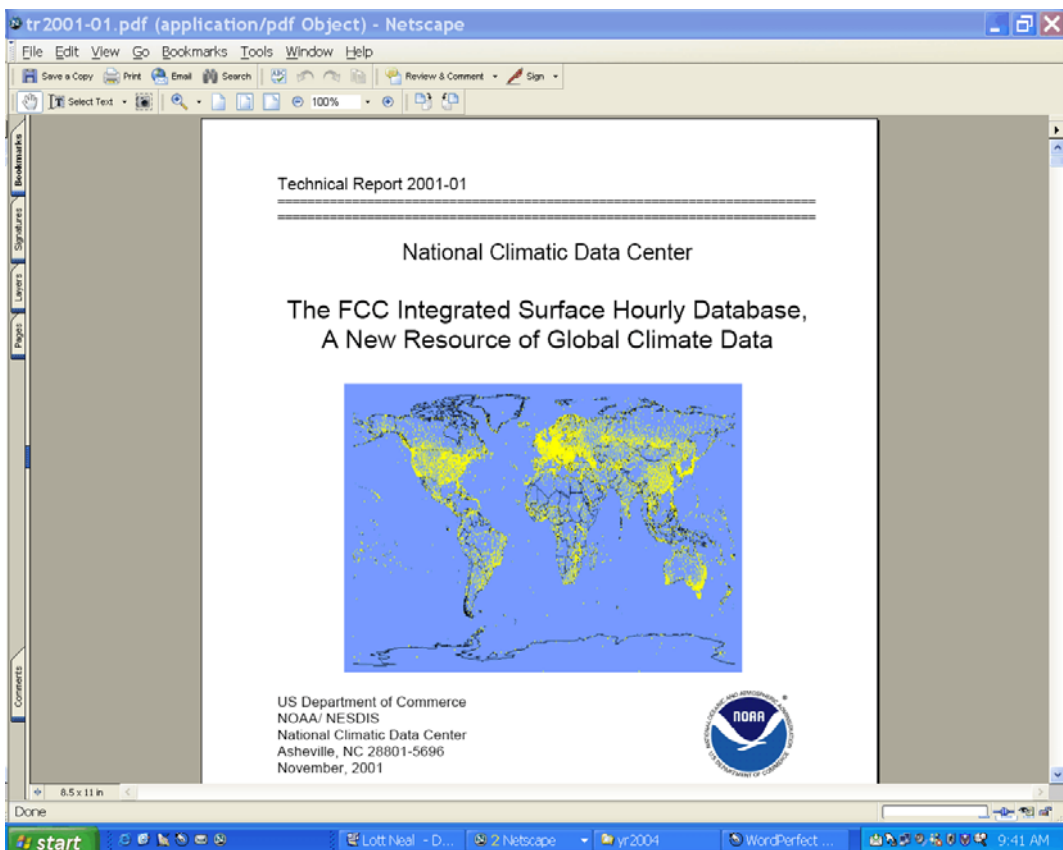
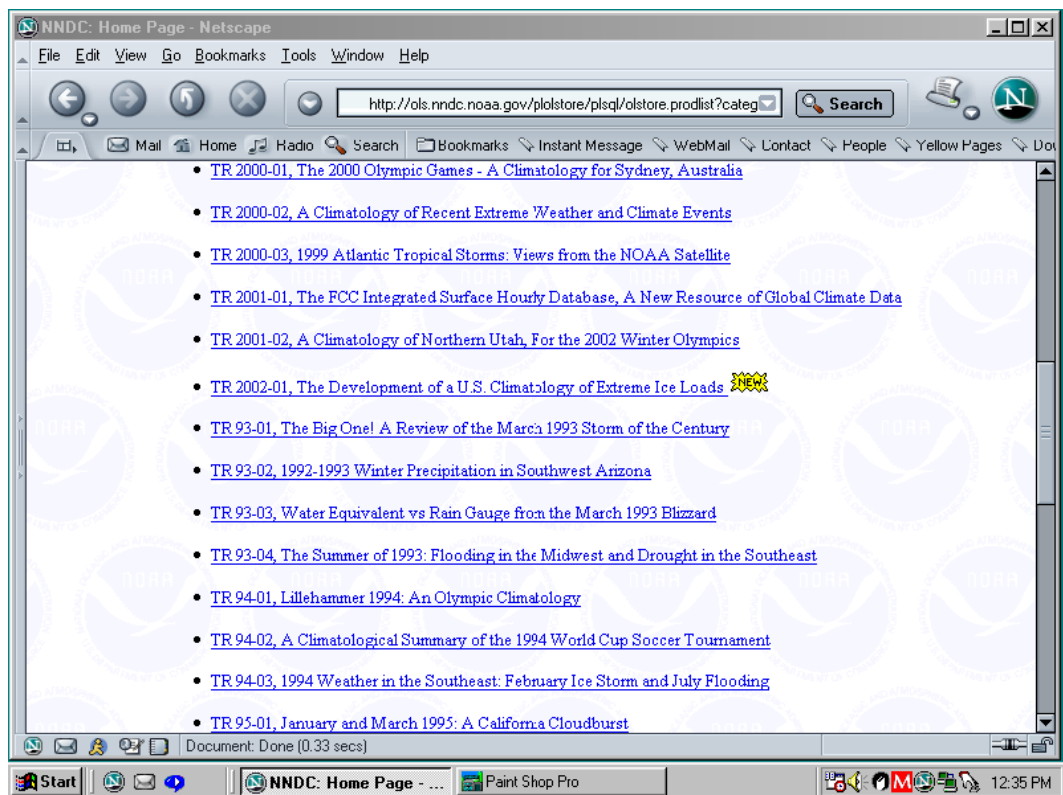
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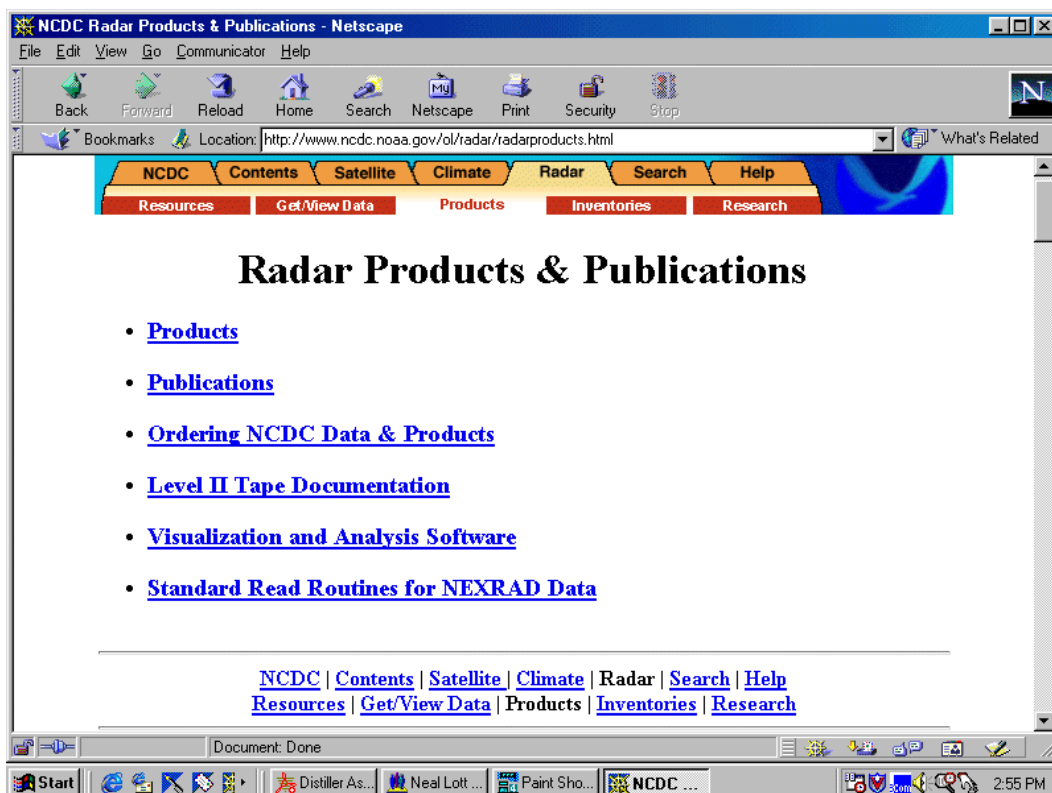
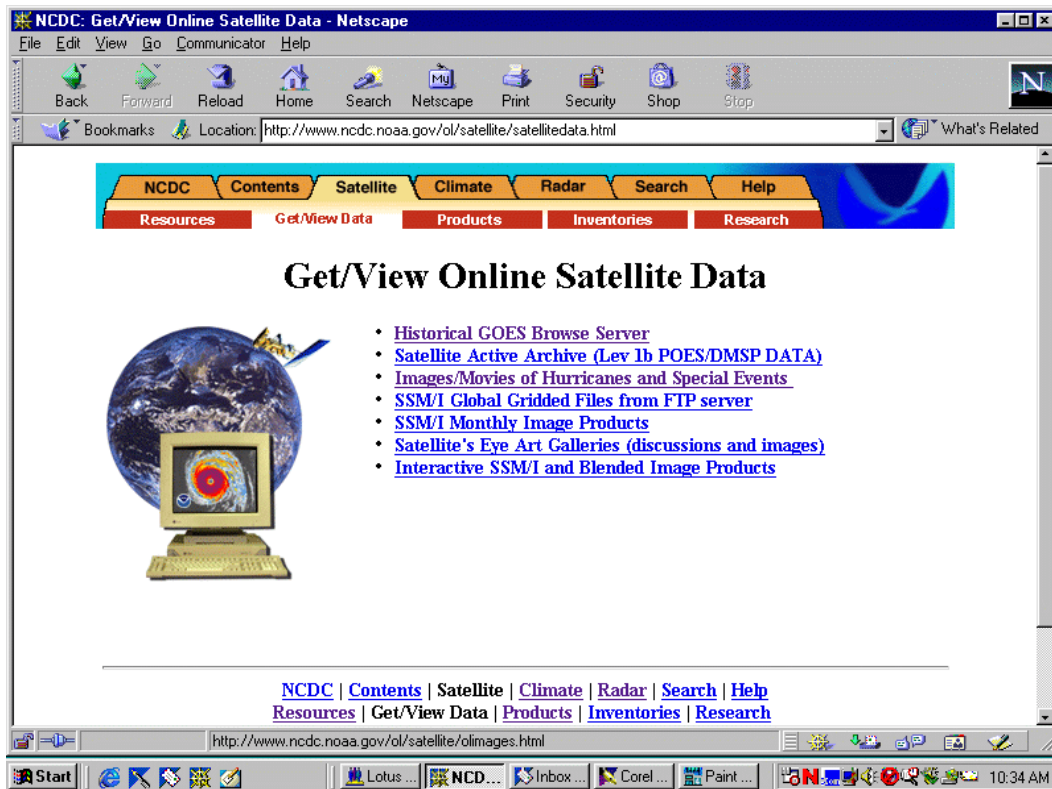


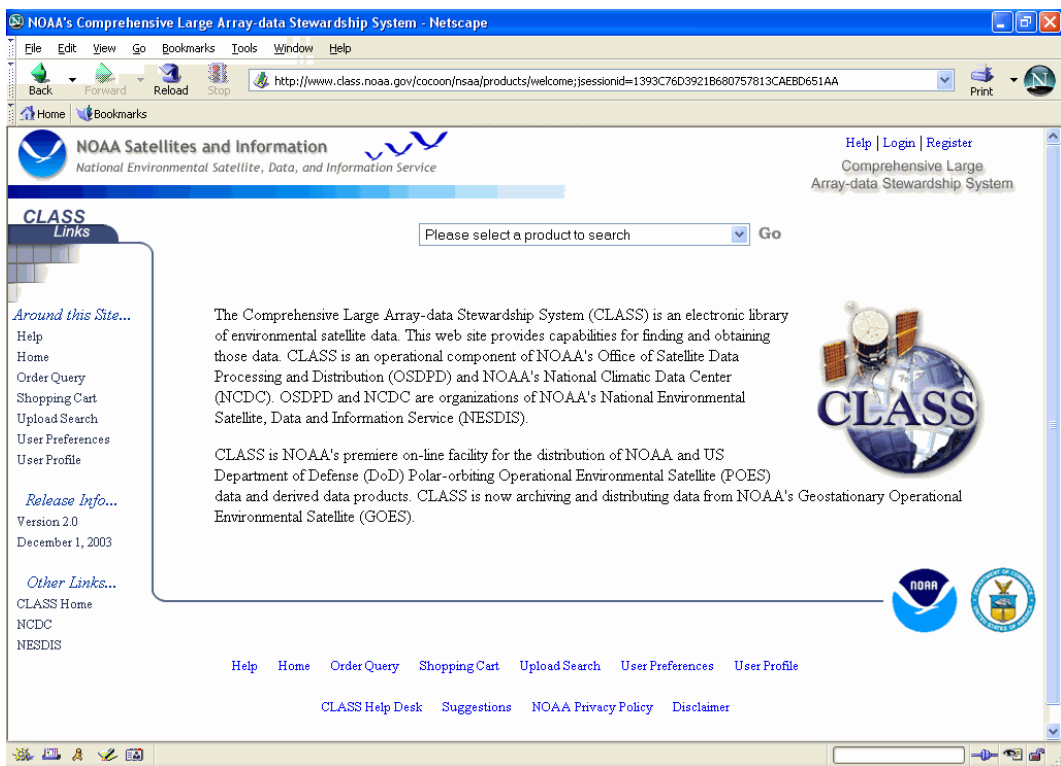
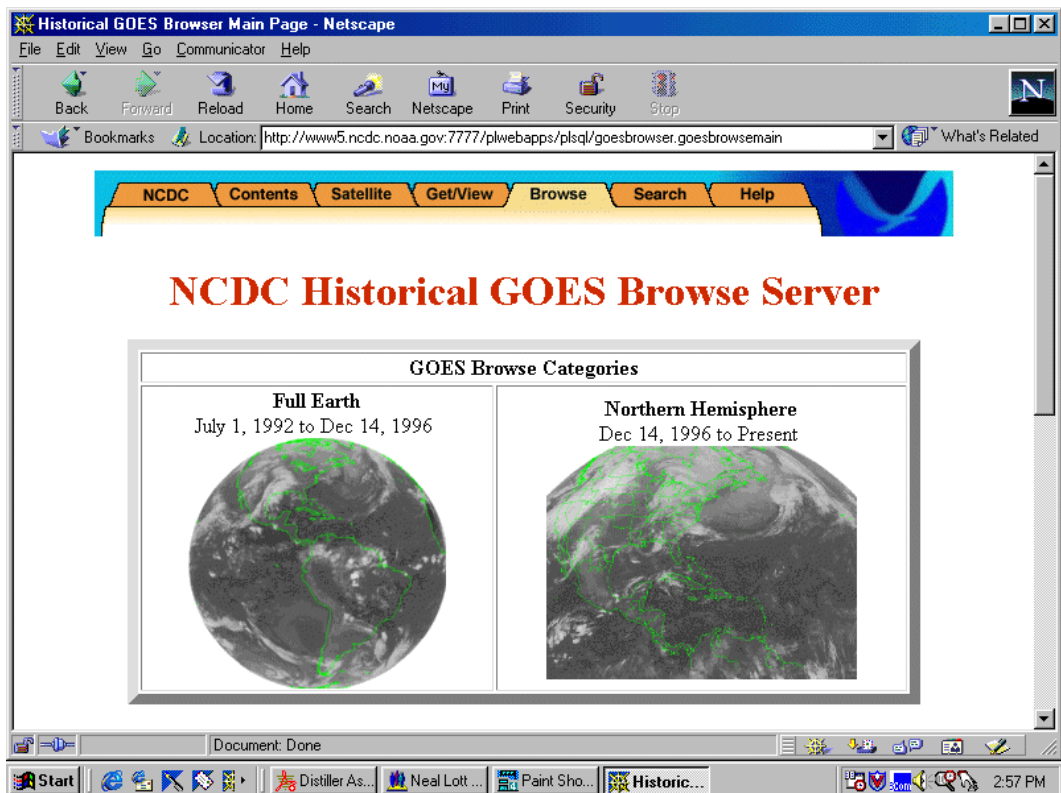




SATELLITE AND RADAR DATA & PRODUCTS

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View Details	Shopping Cart	Inventory ID	Datatype Name	Orbit	Start Time	End Time	Sat ID	Dataset Name
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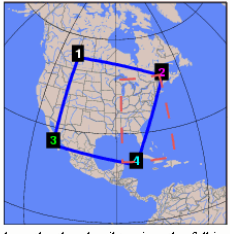
Satellite Active Archive - Search Results - Netscape

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Overlapped Region of Geographic Search:

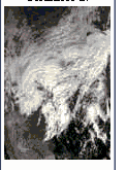



Click on the thumbnail to view the full image.

Temporal (Geographic Overlap):	
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Seconds: 494	Direction: Descending

Spatial (Geographic Overlap):	
NW Lat.Long: 52.87, -109.64	NE Lat.Long: 46.5, -68.78
SW Lat.Long: 24.39, -112	SE Lat.Long: 19.94, -83.4

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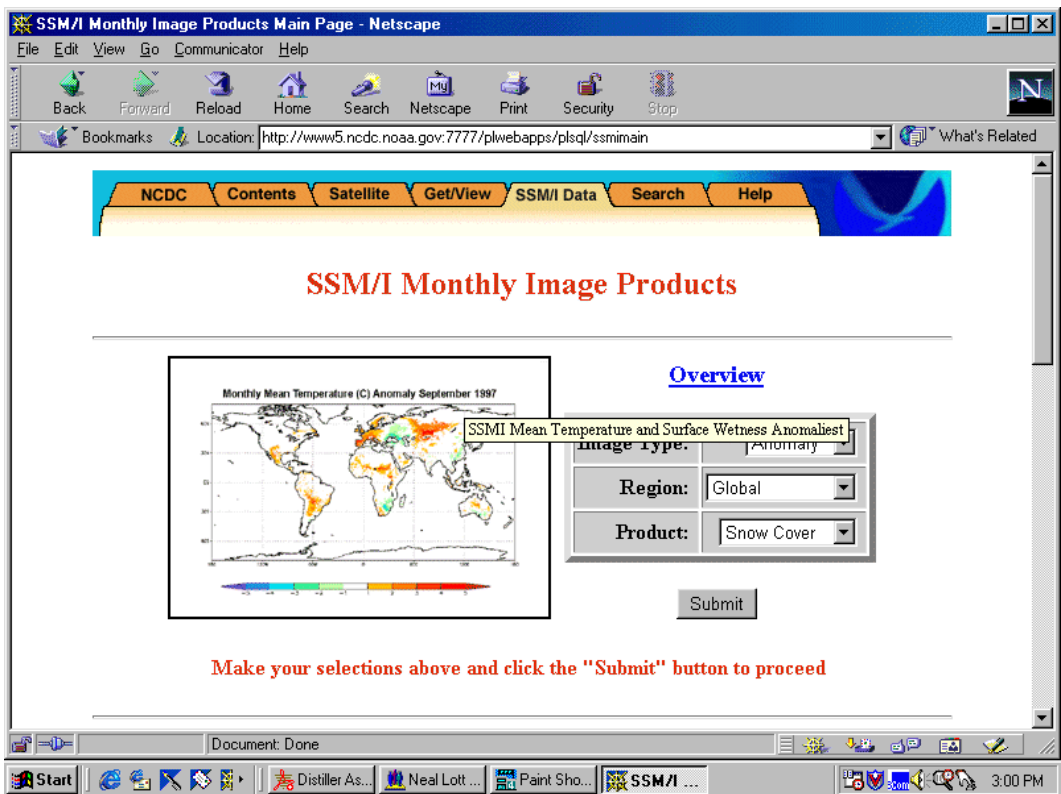
Channel 2:


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Click on a thumbnail to the left to open a window with a full sized browse image. You may then use the controls above to manipulate the full sized browse image.

Note, thumbnail images have been Histogram Equalized, are in the jpeg format at quality 50% and size 50%. Full browse images are in the jpeg format at quality 100% and sized 200% to bring out more details.

Histogram Equalize
Brightness+ Brightness-
Contrast+ Contrast-
Restore Original Browse





CD-ROM PRODUCTS

NCDC has produced a suite of CD-ROM's with diverse environmental data ranging from global tropical cyclone tracks, to worldwide climatologies, to hourly surface data. More details concerning these CD's, including an **on-line ordering system (with discounted prices vs those below)**, are accessible via <http://www.ncdc.noaa.gov/ol/climate/climateproducts.html>.

Climate Atlas of the United States, Version 2.0. This CD-ROM contains version 2.0 of the Climate Atlas of the United States, which features climate maps of all 50 states. It replaces a popular paper Atlas last published in 1968, and supersedes the Climate Atlas of the Contiguous United States published on CD in 2000. The new CD Atlas contains 2023 color maps of climatic elements such as temperature, precipitation, snow, wind, pressure, etc., chosen to portray the climate of the US. The period of record of the data for most of the maps is 1961-1990. The user may install the Atlas onto a local drive, or run the Atlas from the CD. From the Atlas interface, the user chooses an element type (Temperature, or Precipitation, or Snow, etc.), an element (mean, or maximum, or record extreme, etc.), and a geographic area (Lower 48, Alaska, or Hawaii). The Atlas displays maps of the selected element and area using ESRI's ArcExplorer, which is included on the CD. ArcExplorer provides GIS capabilities, such as zoom, query, identify, and theme layering. \$175.

Global Daily Climatology Network. This 2 disk CD-ROM set contains ASCII format daily surface weather data from around the globe. The individual station files, over 30,000 in all, share a common format and have variable record lengths. Metadata information for all stations are included in a single inventory file. In addition, users will find complete documentation available in three popular document formats (.wpd, .doc, and .pdf). Note: This CD-ROM set does not contain import and/or extraction software for processing the data. \$125.

Integrated Surface Hourly Observations. The global surface hourly observations contained on this CD-ROM set are integrated from all of the NCDC and Navy surface hourly data (TD3280), NCDC hourly precipitation data (TD3240), and Air Force DATSAV3 surface hourly data (TD9956). Hourly and synoptic type data for approximately 12,000 global stations are available for 1995-2002, with 2003 to be added as soon as available. There are a total of 24 volumes separated by geographic region and time period. Global extraction software, including a map interface, is provided to aid in identifying and easily selecting the data in either full Integrated Surface Hourly format or delimited/abbreviated format. Various elements such as temperature, dew point, wind speed and direction, sea level pressure, visibility, cloud ceiling, present weather, precipitation, snowfall, snow depth, altimeter setting, station pressure, etc are available. The CD-ROM also contains a data inventory file showing the number of observations

for each month of the year for each station. Each volume contains all the software, support files, and documentation so each volume may be used alone or in combination with other volumes for each time period. \$100 per volume.

NCDC Cooperative Station Data. This CD-ROM set contains ASCII data files and associated station history files for the Cooperative Summary of the Day (TD3200) data set. The data set is a compilation of daily observations from more than 20,000 cooperative weather stations in the United States, U.S. Caribbean Islands, U.S. Pacific Islands, and Puerto Rico. It includes air and soil temperatures, rainfall, snowfall, and evaporation elements. The old TD3200 product had 21 CD-ROMs, while the new is compressed onto only 3 CD-ROMs. A map interface and data selection software allows for very easy selection of data, with several options for data format for the user. The period of record varies among stations but falls within the period from the 1850s through 2001. \$275 for full set, \$100 per volume.

U.S. Daily Climate Normals. This CD provides the 1971-2000 Daily Normals of temperature, precipitation, and degree days for nearly 8000 U.S. weather stations. It also contains the monthly, seasonal, and annual Normals along with the precipitation probabilities and quintiles. The interface allows the user to select an easily readable web form, or a text file that can be imported into a spreadsheet. Microsoft Internet Explorer is required to view and print the web form. Text files can be accessed directly without the use of a web browser. \$75.

U.S. Monthly Climate Normals. This CD-ROM contains 1971-2000 U.S. monthly station normals for nearly 8000 stations in the U.S., selected Pacific Islands, Virgin Islands, and Puerto Rico. The normals can be accessed in both the Adobe PDF and ASCII file formats from a simple html interface. This product includes normals of average monthly and annual maximum, minimum, and mean temperature (degrees F), monthly and annual total precipitation (inches), and heating and cooling degree days (base 65 degrees F). \$75.

International Station Meteorological Climate Summary (ISMCS) Vers 4.0. Provides detailed climatological summaries for 2600 locations worldwide. These locations include National Weather Service stations, domestic and overseas Navy and Air Force sites, and numerous foreign stations. Limited summaries are also given for approximately 4000 additional worldwide sites. This version also contains year/month and long term mean precipitation data for 1000 foreign locations. Tabular or statistical data can be exported to a printer or spreadsheet. Joint NCDC, USAF and U.S. Navy product. Please note that the non-U.S. data cannot be redistributed by users of the CD for commercial purposes. **\$175.**

U.S. Navy Marine Climatic Atlas of the World - Vers 1.1. Includes analysis and display software for climatological averages of atmospheric and oceanographic data. The data are summarized with user-defined 1 and 5 degree grid areas covering the global marine environment. The summaries are produced using predominately ship data collected between 1854-1969. The major elements include air and sea temperature, dewpoint temperature, scalar wind speed, sea-level pressure, wave height, wind and ocean-current roses. This CD-ROM allows the user to define element intervals (e.g. 5 to 10 knots, 2 degree temperature intervals). The CD-ROM also allows contouring for explicitly user-defined regions and exporting data to a printer or diskette. Narratives for Mediterranean ports and ocean basin climatology narratives

are included. U.S. Navy sponsored product. **\$175.**

Global Upper Air Climatic Atlas (GUACA), 1980-1991. This two-volume CD-ROM set uses 12-year (1980-1991) 2.5 degree gridded upper air climatic summaries derived from the European Centre for Medium Range Weather Forecasts (ECMWF) model analyses. The CD-ROM presents upper air statistics for 15 different vertical levels in the Northern and Southern Hemisphere for dry bulb and dewpoint temperature, geopotential height, air density, and vector and scalar wind speed. The CD-ROM provides access/display software for gridpoint data, contouring capability for user-defined areas, and vertical profiles. The climatology covers the 12-year period as well as individual year-months. Joint NCDC and U.S. Navy product. **\$350.**

Global Upper Air Statistics (GUAS), 1980-1995. This single-volume CD-ROM set uses 16-year (1980-1995) 2.5 degree gridded upper air climatic summaries derived from the European Centre for Medium Range Weather Forecasts (ECMWF) model analyses--similar to that used for GUACA above. It presents upper air statistics for 15 different vertical levels in the Northern and Southern Hemisphere for dry bulb and dewpoint temperature, geopotential height, air density, and vector and scalar wind speed. The CD-ROM provides the data as easy-to-use ASCII files without access/display software, and covers the 16-year period summarized for each month. Joint NCDC and U.S. Navy product. **\$100.**

CLIVUE CD-ROM. The National Climatic Data Center (NCDC) developed a CD-ROM in support of a museum exhibit which traveled across the U.S. The CD contains a 1,500-station subset of NCDC's nearly 8,000 U.S. daily cooperative stations. The user selects a date and area of the U.S. and the CD-ROM database is queried for stations within the specified domain having data. Then, the system displays daily maximum and minimum temperatures, precipitation, and snowfall for the site. Graphs showing 7 years, 21 years, and the full period of record (varies by station) for the station(s) are available. Visual displays allow users to view trends, variability, and extremes. Joint NCDC and Franklin Institute product. **\$175.**

SAMSON, 1961-1990. The Solar and Meteorological Surface Observational Network (SAMSON) 3-volume CD-ROM set is divided geographically into regions: eastern, central, and western U.S. It contains hourly solar radiation data along with selected meteorological elements for the period 1961-1990. It encompasses 237 NWS stations in the United States, plus offices in Guam and Puerto Rico. The dataset includes both observational and modeled data. The hourly solar elements are: Extraterrestrial horizontal and extraterrestrial direct normal radiation; global, diffuse, and direct normal radiation. Meteorological elements are: Total and opaque sky cover, temperature and dew point, relative humidity, pressure, wind direction and speed, visibility, ceiling height, present weather, precipitable water, aerosol optical depth, snow depth, days since last snowfall, and hourly precipitation. Joint NCDC and NREL product. **\$175 per region or \$525 per set.**

Radiosonde Data of North America, 1946-1997. Contains all available radiosonde data for North America (U.S., Canada, Mexico, and Caribbean Islands) through the 100-mb level on four disks, for 1946-1997. Data include significant, mandatory, and special wind levels for all observation times, and include geopotential height, temperature, dew point, wind direction, and scalar speed. The user can select for output to printer, screen, or file: a single station or multiple

stations for a defined time period, or all stations within a specified geographic region in either synoptic or station sort. The CD contains available station metadata, and software is available to access the data for DOS, UNIX and VMS computer systems. Joint NCDC and ERL product. **\$700, four volume set.** The latest single CD-ROM (1994-1997) is available separately for **\$175.**

Global Tropical and Extratropical Cyclone Climatic Atlas (GTECCA) 2.0. This single volume CD-ROM contains all global historic tropical storm track data available for five tropical storm basins. Periods of record vary for each basin, with the beginning as early as the 1870s and with 1995 as the latest year. Northern hemispheric extratropical storm track data are included from 1965 to 1995. Tropical track data includes time, position, storm stage (and maximum wind, central pressure when available). The user has the capability to display tracks, and track data for any basin or user-selected geographic area. The user is also able to select storm tracks passing within a user-defined radius of any point. Narratives for all tropical storms for the 1980-1995 period are included along with basin-wide tropical storm climatological statistics. Joint NCDC and U.S. Navy product. **\$175.**

Global Daily Summary (GDS), 1977-1991. This CD-ROM provides access to a 10,000-station set of daily maximum/minimum temperature, daily precipitation, and 3-hourly present weather for the 1977-1991 period of record. Data can be selected for viewing or output to file for geographic areas or by a predefined user-selected list of stations. The dataset includes element flags for suspected erroneous data. A data inventory contains station name, latitude/longitude, elevation, period of record, and the number of observations of available data. **\$175.**

Global Historical Fields (GHF), 1899-1994. Northern hemisphere charts. This CD-ROM allows users to view daily surface charts for the period 1899 through April 1994. Daily upper air charts (700mb, 500mb, 300mb) are available from the late 1940's through April 1994. Surface charts contour sea level pressure only (not station plots); upper air charts contour geopotential heights and temperatures. Charts can be contoured, looped, and exported to a file or printer. Joint NCDC and U.S. Navy product. **\$175.**

U.S. Divisional and Station Climatic Data and Normals. This NCDC CD-ROM contains a collection of ASCII text data and documentation files that pertain to the U.S. climate normals and by-products of the normals. Climatic variables include temperature, precipitation, degree days, and Palmer Drought Indices. The current normals period of 1961-1990 is covered with monthly values calculated for approximately 6600 precipitation and 4700 temperature stations. The earlier data/normals are provided for comparison and research applications. This CD-ROM contains no software or extraction routines that allow users to import the data directly into spreadsheets or other applications. Format and description of the files match NCDC magnetic tape series TD-9640 and TD-9641. **\$100.**

Hourly Modeled Sounding Data, 1990. This 12 volume CD-ROM set contains hourly 80 KM modeled gridpoint U.S. sounding data for 1990. This data is the output from the Penn State University MM4 model which used available daily sounding data for 1990 as input. Wind, temperature, dewpoint depression, and geopotential height data for 8 standard and 15 variable levels are included in the NWS TTAA, TTBB format. One of the applications of this CD-ROM

is to access air pollution impacts on a local scale. Joint NCDC and ARL product. Sold only as a set. **\$600, 12 volume set.**

Coastal-Marine Automated Network (C-MAN) Station and Buoy Reports and Summarized Elements (SeaBreeze), 1974-1993. This two volume CD-ROM set contains climatic summaries and archived observations measured by National Data Buoy Center (NDBC) moored buoys and C-MAN stations for 197 sites. The period of record generally covers a 3-20 year period depending on the station and ends with December 1993. The two volume set consists of archived observations and climatic summary tables. All measurements are included except for spectral wave data and subsurface measurements. A map shows station locations and data inventories show measurements and time periods for each station. The following elements are summarized: monthly frequency distributions of wind speed, wind gust, sea level pressure, air and sea temperature, air-sea temperature difference, dew point (where available), significant wave height, average and dominant wave period. Additional tables include: wind speed versus direction, significant wave height versus dominant and average wave periods, significant wave height versus wind speed. The individual monthly means and extremes for all measurements are included. Stations with less than 3 years of data will only have individual monthly means and extremes summarized. Joint NCDC and NDBC product. This item is sold only as a set. **\$350.**

Polar Ice, 1972-1994. The Arctic and Antarctic Sea Ice Data CD-ROM Version 1.0, contains weekly ice data in the International Sea Ice in the Digital Form (SIGRID) format for 1972-1994 for the Arctic and 1973-1994 for the Antarctic. This .25 degree grid structure includes total ice concentration, thickness stage, and form of ice for the complete period of record. The SIGRID format was designed to meet the sea ice requirements of large-scale climate and statistical studies. The CD-ROM contains no display or extraction routines. The SIGRID reference file provides detailed information concerning the coding system for digitizing sea ice chart data. Joint NCDC, U.S. Navy, National Ice Center product. **\$100.**

HUSWO, 1990-1995. The Hourly U. S. Weather Observations (HUSWO) CD-ROM contains 1990-1995 hourly weather data for 262 NWS locations. It has a map interface and station list for data selection, or you can copy the data files directly from the CD (without using the interface). The elements included are: Total and opaque sky cover, temperature and dew point, relative humidity, station pressure, wind direction and speed, visibility, ceiling height, present weather, ASOS cloud layer data, snow depth, and hourly precipitation. Data can be output in either English or Metric units. Joint NCDC and EPA product. **\$175.**

The Maury Collection, Global Ship Observations, 1792-1910. In recognition of the International Year of the Ocean (YOTO), NCDC has produced a CDROM entitled "The Maury Collection, Global Ship Observations, 1792-1910." It contains nearly 1.5 million historical ships' weather observations, 1792-1910, with the majority taken during the period 1820-1860. The observations include air and sea temperatures, ocean currents, pressure, cloud cover, present weather, and wind direction/speed. The data were digitized from paper copies of hand written forms via the U.S.-PRC Protocol on Cooperation in the Field of Marine and Fishery Science and Technology, by the Joint Coordination Panel for Data and Information Cooperation, facilitated by NOAA and the government of China. This CD-ROM contains no display or extraction routines. **\$100.**

United States Snow Climatology. This 3-disk CD-ROM set describes the snow climatology of the United States. Snowfall and snow depth data through 1996 were analyzed for 5525 stations in the contiguous U.S. and Alaska. Climatic variables include daily, monthly, and seasonal snowfall and snow depth. Computed statistics include mean, median, quartiles, extremes, frequencies, and the number of years with non-missing data. Several indicators were computed, based on the data and metadata, to enable the user to assess the quality of the stations. These include frequencies of station moves and observation time changes, number of missing values and breaks in the record, number of values failing the QC checks, and percentages indicating how complete the data record is. The snow climatology CD-ROM also includes files from two other NCDC projects: 1) return period statistics of seasonal (August-July) 1-day, 2-day, and 3-day extreme snowfall, and total seasonal snowfall amount--for 10-year, 25-year, 50-year, and 100-year return periods; 2) 1961-1990 snowfall and snow depth normals. The CD-ROM set is a collection of DOS ASCII files; the CD contains no software or extraction routines that allow the user to import data directly into spreadsheets or other applications. However, a file may be easily copied from the CD-ROM onto a hard drive or other device with the DOS copy command for manipulation. The text files are easily read by a word processor or text file editor. **\$300.**

Time Series of Global Monthly Vegetation Cover from NOAA/AVHRR, 1985-1997. This CD-ROM contains data generated from the National Oceanic and Atmospheric Administration (NOAA) Polar-orbiting Operational Environmental Satellite (POES) Advanced Very High Resolution Radiometer (AVHRR) instrument. These data were further processed into Normalized Difference Vegetation Index (NDVI) data. There are twelve years of global monthly NDVI files, in both digital and graphical formats. The CD-ROM is arranged as a series of HTML files that are linked to each other through the Welcome page. A portion of this CD-ROM is available online at URL: <http://www2.ncdc.noaa.gov/docs/ndvisamp/intro.htm>. **\$175.**

Global Climate Normals, 1961-1990: This CD-ROM contains a collection of DOS files which describe the 1961 - 1990 global standard climate normals for over 4000 stations worldwide, computed by more than 135 countries and territories. The files include ASCII data files, documentation files, eye-readable ASCII table files, graphics files, and limited extraction software. The data are provided in large files with a fixed length record format. They can be read by software written by the user according to the format specifications outlined in the documentation files. The data files may also be opened by any ASCII-compatible application that can handle large data volumes. The graphics files are maps identifying the countries that submitted normals. This CD-ROM contains no software or extraction routines that allow users to import the data directly into their spreadsheets or other applications. This is an NCDC product in conjunction with the World Meteorological Organization. **\$100.**

Probabilities of Temperature Extremes in the USA, Vers 1.0. This CD allows the user to use the U.S. climate normals and various projections of temperature trends to generate statistics for numerous U.S. locations. The software generates frequency distributions of user-selected temperature extremes. **\$175.**

U.S. Hourly Precipitation Data, 1948-1998. These data and software were developed jointly by the National Climatic Data Center (NCDC) and NOAA's Forecast Systems Laboratory

(FSL). Data files contain hourly precipitation amounts for more than 2500 active stations and close to 7000 total stations. The period of record is 1948 through June 1998, although some stations begin in 1900. Access software, available for most UNIX and DOS platforms, is included to extract data from the CDROM archive and, if needed, can be used to summarize the data into daily or monthly precipitation quantities. Display software (java-enabled web browser required) will generate zoomable map and time series graphics. 2-CD set. **\$350.**

National Climatic Data Center Periodical Publications. Contains PDF format versions of NCDC serial publications. Monthly issues of Climatological Data (all states), Hourly Precipitation Data (all states), Storm Data, and Monthly Climatic Data for the World. **\$225 for latest quarter, \$1000 for one year subscription (issued quarterly).**

Engineering Weather Data. This CD-ROM contains an update of a very popular publication that was first printed by the Air Force in 1967 and republished in 1978. As compared to the Engineering Weather Data publication, the new interactive CD-ROM database contains updated meteorological tables, new summarized parameters, and graphical displays. Approximately 800 worldwide stations have been summarized. For each station, the data and information on this CD-ROM include: Summarized design criteria data for dry and wet bulb temperatures and humidity ratios, average annual climate summaries, psychrometric summaries, binned temperature data, annual temperature and humidity summaries, heating and cooling degree data summaries for building envelop loads, ventilation and infiltration loads, solar radiation data, and seasonal wind direction and wind speed summaries. Please note that the non-U.S. data cannot be redistributed by users of the CD for commercial purposes. **\$100.**

Important Notes

- ◆ Many NCDC CD-ROM products were produced for use in a 'DOS' or Windows PC environment and will not work in an Apple 'MAC' environment. In addition, some of the NCDC CD-ROMs were produced in a pre-Windows 95/98/XP environment and may not work without configuration changes or rebooting in DOS mode. NCDC will provide a help sheet for Windows 95/98/XP users, if requested.
- ◆ Some of the CD-ROMs present the data in an atlas type format (interactive software) rather than as ASCII data files. If you have technical questions, call 828-271-4702.
- ◆ The NCDC's Climate Services Branch is responsible for distribution of NCDC CD-ROM products. Domestic customers add a \$11.00 service charge per order; foreign users add \$31.00 per order. Address:
National Climatic Data Center Attn: Climate Services Branch
151 Patton Avenue Telephone: 828-271-4800; Fax: 828-271-4876
Asheville, NC 28801-5001 Internet: ncdc.orders@noaa.gov

SPECIALIZED PRODUCTS

General Information

These Specialized Products can be provided on diskette or as paper copy (unless otherwise indicated). Please call 828-271-4800 or email "ncdc.info@noaa.gov" for further details. There are charges involved for these services.

Cooperative Station Extremes Tabulation: This tabulation shows daily and monthly extremes for the entire period of record (generally 1948 to present) for U.S. cooperative and National Weather Service sites. There are currently over 8000 of these stations active. The elements included are maximum/minimum temperature, precipitation, and snowfall.

Wind Rose Summary: This summary provides a statistical summary of wind speed vs wind direction for any station (U.S. or foreign) reporting adequate observational data. Data are tabulated in incremental 'bins' such as 0-3 miles per hour, 4-7 miles per hour, etc.

Mixing Height Summary: This summary provides a day by day estimate of the mixing height for the boundary layer by using surface and upper air observational data. It's often used for pollution and air dispersion models.

Stability Array: This provides month by month averages of surface-based stability in Pasquill stability categories. Hourly or synoptic surface observations are used as input.

Summary of Day Data for U.S. and Foreign Sites: This historical summary of day data can be produced from any station reporting synoptic and/or hourly observational data. The format is the same as the on-line global summary of day data. It includes the following elements for each day available:

- Mean temperature
- Mean dew point
- Mean sea level pressure
- Mean station pressure
- Mean visibility
- Mean wind speed
- Maximum sustained wind speed
- Maximum wind gust
- Maximum temperature
- Minimum temperature
- Precipitation amount
- Snow depth
- Indicators for occurrence of: Fog, Rain, Snow, Hail, Thunder, Tornado/Funnel Cloud

KEY DIGITAL DATASETS

General Information

1. See glossary of acronyms at end of Guide for details on terms used below.
 2. The periods of record for these datasets vary considerably depending on data type and station.
 3. All reference to QC pertains strictly to data checking and corrections performed within the Federal Climate Complex by NCDC and/or AFCCC. Other gross QC is usually performed at the point of origin such as NCEP and AFWA.
 4. The media available are: IBM 3480 cartridge tape, diskette, CDROM, DVD, 8 mm tape, and FTP transfer. These options vary depending on the dataset.
 5. Cost to customer varies depending on data volume and the processing required for order.
 6. **This is only a summary of the major digital datasets available from NCDC.** Many other datasets/data types (in addition to those listed below) are available. See <http://www4.ncdc.noaa.gov/ol/documentlibrary/datasets.html> for a complete list and documentation for datasets.
 7. NCDC's WWW Homepage has numerous datasets and data inventories on-line at <http://www.ncdc.noaa.gov>. NCDC makes frequent updates to this system; users are encouraged to review the Homepage periodically to see what's available.
 8. **Datasets which are fully or partly available online are noted as such;** otherwise, data are only available off-line. Some datasets are also available on CDROM with interactive data selection software included for easy access.
 9. Points of contact for information, cost estimates, and data requests:
National Climatic Data Center
Climate Services Branch
151 Patton Avenue
Asheville, NC 28801
Telephone: 828-271-4800, Fax: 828-271-4876
Internet: ncdc.info@noaa.gov
-

DATABASE: Worldwide surface observations (hourly/synoptic). Includes 3 datasets - DSI3505, DSI3280, and DSI9956.

DSI3505--Integrated Surface Hourly (ISH)--worldwide stations.

Data Type - ASCII character data.

Quality Control - Extensive automated QC (all data); additional manual QC for USAF, Navy, and NWS stations.

Data Origin - An integration of data from DSI9956, DSI3280, and DSI3240 (each described below), comprising all stations available historically in DSI9956 and DSI3280.

Content/Elements

- About 10,000 stations currently active.
- Includes wind speed and direction, wind gust, temperature, dew point, cloud data, sea level pressure, altimeter setting, station pressure, present weather, visibility, precipitation amounts for various time periods, snow depth, and various other elements as observed by each station.
- Observational practices vary by country.

Period of Record - 1900 to present (varies greatly by station).

Notes - See <http://www4.ncdc.noaa.gov/ol/documentlibrary/datasets.html> for further details. The complete ISH dataset for 1995-2002 is available on a CDROM set, and will be updated annually.

Online - Yes, <http://cdo.ncdc.noaa.gov> - now being updated to include ISH.

DSI3280--Navy and first order National Weather Service (NWS) stations.

Data Type - ASCII character data.

Quality Control - Undergoes extensive automated and manual QC.

Data Origin - Mainly from ASOS-direct ingest, diskettes from the stations, and keyed data for NWS stations; and from DSI9956 (see below) for Navy stations.

Content/Elements

- About 380 stations currently active.
- Includes most surface elements observed in the U.S. (wind speed and direction, temperature, dew point, cloud data, sea level pressure, altimeter setting, station pressure, present weather, and visibility). Wind gust, daily precipitation amount, and snow depth are not included, but are placed in DSI3210 (see below). Hourly precipitation amount stored in separate dataset (DSI3240).
- "Specials" are not included and only synoptic hours (every 3rd hour) are included for 1965-1981 (for most stations).

Period of Record - 1948 to present.

Notes - See <http://www4.ncdc.noaa.gov/ol/documentlibrary/datasets.html> for further details. Data subsets for 1961-1995 are available on 3-volume and 1-volume CDROM sets.

DSI9956--AFCCC DATSAV3 Surface--worldwide stations.

Data Type - ASCII character data.

Quality Control: Extensive automated QC (all data); manual QC for USAF stations.

Data Origin - Mainly from GTS, various other sources, and keyed data prior to 1973.

Content/Elements

- About 10,000 stations currently active.
- Includes all surface elements observed internationally (see DSI3280) along with wind gust, precipitation amount, snow depth, and other elements as reported by each station. Also includes "Specials."
- Observational practices vary by country.

Period of Record - 1973 to present with some data from 1900 to present.

Notes - See <http://www4.ncdc.noaa.gov/ol/documentlibrary/datasets.html> for further details. NCDC can produce summary of day data (1 record per day) from this dataset--18 elements summarized as available.

DATABASE: Worldwide ship and buoy observations (hourly/synoptic). Includes 2 datasets - DSI1129 and DSI1171.

Data Type - ASCII character data.

Quality Control - Undergoes automated + some manual QC.

Data Origin - Data originate from GTS + some key entered data.

Content/Elements

- Includes elements observed by ships and buoys--temperature and dew point, wind direction and speed, visibility, present weather, sea level pressure, sea surface temperature, cloud data, ice data, and wave/swell heights and periods.
- Generally, buoys only observe temperature, wind, pressure, sea surface temperature, and wave/swell data; while some ship reports include other elements.
- Elements vary considerably by station.

Period of Record - As early as 1800's to present.

Notes - See <http://www4.ncdc.noaa.gov/ol/documentlibrary/datasets.html> for further details.

- Occasionally, if needed observations are not found in DSI1129 or DSI1171, we use DSI9956 as a source.

DATABASE: Worldwide upper-air observations--Comprehensive Aerological Reference Dataset (CARDS)--DSI6305.

Data Type - ASCII character data.

Quality Control - Undergoes some automated QC.

Data Origin - Various sources including diskettes from the stations (U.S. + some Mexican), key entered data, digital data from source countries, and GTS.

Content/Elements

- Includes all elements observed in upper air soundings--generally temperature, dew point, wind direction and speed, and height of each pressure level.
- About 1000 stations currently active.

Period of Record - Generally 1946 to present.

Notes - See <http://www4.ncdc.noaa.gov/ol/documentlibrary/datasets.html> for further details.

- Also have North American data for 1946-1997 on 4-volume CDROM set.
-

DATABASE: Hourly precipitation data for NWS and cooperative U.S. stations--DSI3240.

Data Type - ASCII character data.

Quality Control - Undergoes automated and manual quality control.

Data Origin - Various sources including ASOS and punched tape from stations.

Content/Elements

- Hour-by-hour precipitation amounts.
- About 2800 stations currently active.

Period of Record - Generally 1948 to present.

Notes - See <http://www4.ncdc.noaa.gov/ol/documentlibrary/datasets.html> for further details.

- Data are also available on a CDROM set.

Online - Yes, <http://cdo.ncdc.noaa.gov> - provides access to the entire dataset.

DATABASE: 15-Minute precipitation data for NWS and cooperative U.S. stations--DSI3260.

Data Type - ASCII character data.

Quality Control - Undergoes automated and manual quality control.

Data Origin - Various sources including ASOS and punched tape from stations.

Content/Elements

- Precipitation amounts for 15-minute increments.
- About 2400 stations currently active.

Period of Record - Generally 1971 to present.

Notes - See <http://www4.ncdc.noaa.gov/ol/documentlibrary/datasets.html> for further details.

Online - Yes, <http://cdo.ncdc.noaa.gov> - provides access to the entire dataset.

DATABASE: Cooperative station and NWS summary of day data for the U.S.--DSI3200.

Data Type - ASCII character data.

Quality Control - Undergoes automated and manual quality control.

Data Origin - Various sources including key-entry from forms and ASOS.

Content/Elements

- Includes summary of day parameters such as maximum/minimum temperatures, precipitation, and snowfall/snow depth. Some stations have additional data such as evaporation and soil temperature.
- About 8000 stations currently active.

Period of Record - Generally 1948 to present (some late 1800's to present).

Notes - See <http://www4.ncdc.noaa.gov/ol/documentlibrary/datasets.html> for further details.

- Data are also available on a CDROM set.

Online - Yes, <http://cdo.ncdc.noaa.gov> - provides access to the entire dataset.

DATABASE: Summary of day data for National Weather Service (U.S.) and Department of Defense (U.S. and foreign) sites.

Data Type - ASCII character data.

Quality Control - Both datasets are QC'ed (automated + manual).

Data Origin - Various sources including ASOS, diskettes from stations, and key-entry.

Content/Elements

- Includes maximum/minimum temperatures, precipitation, snow depth, peak wind gust, sunshine, days with various weather phenomenon, and several other elements for selected stations.
- About 600 stations currently active.

Period of Record - Generally 1940's to present with some data as old as the late 1800's.

Notes - See <http://www4.ncdc.noaa.gov/ol/documentlibrary/datasets.html> for further details.

DATABASE: Monthly summary data for NWS and cooperative U.S. stations--DSI3220.

Data Type - ASCII character data.

Quality Control - Undergoes automated and manual quality control.

Data Origin - Monthly summaries built from NWS and cooperative daily data as described above.

Content/Elements

- Includes temperature (mean minimum, mean maximum, overall mean, extreme minimum, extreme maximum), precipitation amount, and for selected stations-- snowfall, evaporation data, and soil temperature data.
- About 8000 stations currently active.

Period of Record - Generally 1948 to present (some late 1800's to present)

Notes - See <http://www4.ncdc.noaa.gov/ol/documentlibrary/datasets.html> for further details.

Online - Yes, <http://cdo.ncdc.noaa.gov> - provides access to the entire dataset.

DATABASE: Hourly solar radiation and meteorological data for the U.S., Guam, and Puerto Rico--DSI3282.

Data Type - ASCII character data.

Quality Control- Underwent extensive QC of data.

Data Origin - Originated from 3 sources--NWS hourly surface data, NWS summary of day data, and NREL solar radiation data.

Content/Elements

- Includes 5 solar radiation elements + 15 meteorological elements with both observational and modeled data.
- 239 stations.

Period of Record - 1961 to 1990.

Notes - See <http://www4.ncdc.noaa.gov/ol/documentlibrary/datasets.html> for further details.

- Data are also available on 3-volume CDROM set.

DATABASE: Worldwide gridded upper-air analysis (multiple pressure levels).

Includes 5 datasets:

DSI6140 (NGM and MRF data)--

Data Type - Binary data.

Quality Control - No quality control performed.

Data Origin - Data originate from NCEP's model output.

Content/Elements

- NGM: Covers U.S., southern Canada, and nearby coastal waters. 180 km by 180 km polar stereographic grid. Includes temperature, specific humidity, vertical velocity, and u/v wind components from about 980 mb to 434 mb + 11 variables for the surface. 12 analysis hours/day.
- MRF: Worldwide coverage. 2.5 degree by 2.5 degree grid. Includes temperature, relative humidity, vertical velocity, geopotential, and u/v wind components from 1000 mb to 50 mb + 3 variables for the surface. 4 analysis hours/day.

Period of Record - 1991 to present.

Notes - See <http://www4.ncdc.noaa.gov/ol/documentlibrary/datasets.html> for further details.

DSI6141 (ETA and FNL data)--

Data Type - Binary data.

Quality Control - No quality control performed.

Data Origin - Data originate from NCEP's model output.

Content/Elements

- ETA: Covers U.S., southern Canada, and nearby coastal waters. 80 km by 80 km Lambert Conformal grid. Includes pressure, temperature, precipitation, soil moisture, relative humidity, u/v wind components, snow/rain occurrence, latent heat flux, sensible heat flux, momentum flux, low cloud cover, medium cloud cover, high cloud cover, total cloud cover, radiation flux, geopotential height, and vertical velocity. 22 pressure levels from surface to 50 mb. 8 analysis hours per day.
- FNL: Worldwide coverage. 129 by 129 polar stereographic grid. Includes pressure, temperature, precipitation, soil moisture, relative humidity, u/v wind components, latent heat flux, sensible heat flux, momentum flux, total cloud cover, radiation flux, geopotential height, and vertical velocity. 14 pressure levels from surface to 20 mb. 4 analysis hours per day.

Period of Record - 1997 to present.

Notes - See <http://www4.ncdc.noaa.gov/ol/documentlibrary/datasets.html> for further details.

AFCCC's HIRAS--

Data Type - ASCII character data.

Quality Control - No quality control performed.

Data Origin - Data originate from AFWA's model output.

Content/Elements

- Worldwide coverage.
- 4 analysis hours/day.
- On 2.5 degree by 2.5 degree grid.
- Includes temperature, dew point depression, specific humidity, precipitable water, vorticity, relative humidity, u/v wind components, D-value, and tropopause data from the surface to 10 mb.

Period of Record - 1985 to present.

Notes - Request database manual for further details.

DATABASE: Worldwide gridded cloud analysis--DSI9951 (AFCCC's RTNEPH).

Data Type - Binary data.

Quality Control - Undergoes automated QC of data.

Data Origin - Data originate from AFWA's model output.

Content/Elements

- 8 analysis hours/day.
- On polar stereographic grid (eighth-mesh--roughly 40 km by 40 km resolution).
- Includes cloud layer data (base, top, type, and amount) and total cloud amount from surface reports and satellite data, along with present weather and visibility from surface reports.

Period of Record - 1984 to present.

Notes - Request database manual for further details.

DATABASE: Global aircraft reports--DSI6380.

Data Type - ASCII character data.

Quality Control - Undergoes automated QC.

Data Origin - Data originate from PIREPS, AIREPS, ASDAR, and ACARS reports.

Content/Elements

- Includes pressure altitude, temperature, relative humidity, dew point, wind direction and speed, clouds, and turbulence.

Period of Record - Generally 1973 to present.

Notes - See <http://www4.ncdc.noaa.gov/ol/documentlibrary/datasets.html> for further details.

DATABASE: ASOS 1-minute and 5-minute data--DSI6401-6406.

Data Type - ASCII character data.

Quality Control - Undergoes automated QC.

Data Origin - Data originate from ASOS ingest process.

Content/Elements

- Includes most surface elements observed in the U.S. (wind speed and direction, temperature, dew point, cloud data, sea level pressure, altimeter setting, station pressure, present weather, visibility, precipitation amount, etc).
- About 900 stations currently active.

Period of Record - Generally 1998 to present.

Notes - See <http://www4.ncdc.noaa.gov/ol/documentlibrary/datasets.html> for details.

DATABASE: NOAAPORT data.

Data Type - ASCII character and binary data.

Quality Control - No quality control performed.

Data Origin - Data originate from NOAAPORT ingest.

Content/Elements

- Includes all surface, upper-air, forecast, warning, and other bulletins received via NOAAPORT. Also includes all NCEP model data as binary files, such as the ETA, AVN, and MRF.

Period of Record - Late 2000 to present.

Notes - These are the “raw” data as received from NCEP and NWS.

DATABASE: Remote-sensing data. Satellite (worldwide), wind profiler (central U.S.), NEXRAD radar data (U.S. sites). See separate sections (following pages) for additional details.

Data Type - All are binary data.

Quality Control - Little or no QC performed on these data.

Data Origin - Data originate from the sensor (satellite, profiler, radar).

Content/Elements

- Satellite data are available in several datasets from NCDC's Satellite Services Group.
- Profiler data are available from 1991 to present.
- NEXRAD data are available as level II and level III.

Period of Record - Varies depending on the dataset and station.

Notes - Request database documentation for further details.

Online - Yes, <http://has.ncdc.noaa.gov> - provides access to all NEXRAD level II and III data.

NEXRAD DATA

Important Update: <http://has.ncdc.noaa.gov> now provides access to all NEXRAD level II and III data.

NEXRAD LEVEL II (DIGITAL BASE DATA)

Level II data are digital base data output from the Radar Data Acquisition's (RDA's) signal processor in polar format containing status messages, performance/maintenance data, volume scan strategy, clutter filter bypass map, and wideband communication console messages. The meteorological elements included are base reflectivity, base velocity, and base spectrum width. Initially, Level II recorders were placed at selected sites for use when significant weather events were taking place. As the system developed, it became apparent that Level II data would be important in properly calibrating the radars, in research applications, and to test revised algorithms, so level II recorders were placed at all WSR-88D sites.

Exabyte tape drives and 8mm tapes are used as recording devices and media. Each tape can hold approximately 4.7 gigabytes of data and, depending on operational mode of the model and recorder model used, one tape may be filled about every 1.8 days for each site. These tapes are received at the National Climatic Data Center (NCDC) from individual sites and are processed on a series of 8505 Exabyte drives, reblocked, cataloged, inventoried, and archived. This system is now being transitioned to electronic ingest of the data.

The WSR-88D is a very complex system. Program modifications and engineering changes are common. Early models experienced difficulties in the recording of Level II data and even today tapes are received that contain spurious, erroneous, or illegal configurations. The user is cautioned that these anomalies may be encountered while reading the archived tapes, and in some cases, data gaps are evident. Also, users may now receive level II data from NCDC via ftp rather than via tape, and ftp is the recommended method of receipt in most cases.

Personnel at the NCDC will be glad to assist in solving problems encountered in reading the data; however, technical questions about the data themselves must be addressed to the:

NWS/Operational Support Facility
Applications Branch
1200 Westheimer Drive
Norman, OK 73069
Telephone: (405) 366-6530
Fax: (405) 366-6550

The NCDC also distributes the software to display the WSR-88D Level II data. Reflectivity, velocity, and spectrum width can be displayed using a software package called Interactive Radar Analysis System (IRAS). The software application allows users to read and display realtime and

archived Level II radar data on platforms supporting Java (version 1.3 and higher). Java-IRAS is a platform independent software application written by David Priegnitz under grant funding received by the ESDIM Program (Environmental Services Data and Information Management Program). The Java-IRAS development is part of the activity surrounding the Collaborative Radar Acquisition Field Test (CRAFT) Project to deliver high-resolution WSR-88D Level II (base) radar data via the Internet in realtime. A copy of the IRAS software may be obtained via the World Wide Web (WWW): <http://www.ncdc.noaa.gov/oa/radar/iras.html>

Also, NEXRAD inventories and national composites of reflectivity (precipitation) are available via the World Wide Web (WWW): <http://www.ncdc.noaa.gov/oa/radar/radarresources.html>

NEXRAD LEVEL III (PRODUCTS)

There are a total of 24 Level III products routinely available from the National Climatic Data Center (NCDC) which include 7 graphic products in clear air mode, 11 graphic products in precipitation mode, 5 graphic overlays and 1 alphanumeric product. Products are stored on Write Once Read Many (WORM) optical disks that are sent to the NCDC by National Weather Service Nexrad sites for archive and distribution to customers. Each product will include state, county, and city background maps. Level III graphic products are available only as color hard copy, gray scale hard copy or acetate overlay copies. The following is a list of the Nexrad Level III products available from NCDC:

Base Reflectivity (R) - A display of echo intensity measured in dBZ.

Base Spectrum Width (SW) - A measure of velocity dispersion within the radar sample volume.

Base Velocity (V) - A measure of the radial component of the wind either toward the radar (negative values) or away from the radar (positive values).

Composite Reflectivity (CR) - A display of maximum reflectivity for the total volume within the range of the radar.

Echo Tops (ET) - An image of the echo top heights color coded in user-defined increments.

Hail Index Overlay (HI) - A product designed to locate storms which have the potential to produce hail.

Mesocyclone Overlay (M) - This product is designed to display information regarding the existence and nature of rotations associated with thunderstorms.

One-hour Precipitation (OHP) - A map of estimated one hour precipitation accumulation on a 1.1 x 1.1 nm grid.

Severe Weather Probability Overlay (SWP) - A measure of a storms relative severity as compared with those storms around it.

Storm Structure (SS) (Alphanumeric product) - A table displaying information on storm

attributes which include maximum reflectivity, maximum velocity at lowest elevation angle, storm overhang, mass weighted storm volume, storm area base and top, storm position and storm tilt.

Storm Total Precipitation (STP) - A map of estimated storm total precipitation accumulation continuously updated since the last one-hour break over the entire scope.

Storm Tracking Information Overlay (STI) - A product which shows a plot of the past hours movement, current location, and forecast movement for the next hour or less for each identified thunderstorm cell.

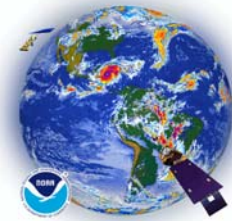
Tornadic Vortex Signature Overlay (TVS) - A product which shows an intense gate to gate azimuthal shear associated with tornadic-scale rotation.

VAD Wind Profile (VWP) - A graphic display of wind barbs plotted on a height staff of 500 ft or 1000 ft increments.

Vertically Integrated Liquid (VIL) - The water content of a 2.2 x 2.2 nm column of air which is color coded and plotted on a 124 nm map.

SATELLITE DATA, PRODUCTS, and SERVICES

Satellite data and derived products from NOAA's satellite systems are available through the National Climatic Data Center and Comprehensive Large Array-data Stewardship System (CLASS). The two primary satellite systems are the Geostationary Operational Environmental Satellite (**GOES**), which began in 1975, and the Polar-orbiting Operational Environmental Satellite (**POES**), which began as the TIROS series in 1960. The NCDC and CLASS also archives and distributes certain data sets from the Defense Meteorological Satellite Program (**DMSP**) satellites. See complete product listing below.



The Comprehensive Large Array-data Stewardship System (CLASS) is a multi-site archive, retrieval, and delivery system for the distribution of NOAA and US Department of Defense (DoD) data. Polar-orbiting Operational Environmental Satellite (POES) data and Geostationary Operational Environmental Satellite (GOES) data and many satellite derived data products are available through CLASS's web interface. The URL is: www.class.noaa.gov. CLASS is an operational component of NOAA's Office of Satellite Data Processing and Distribution (OSDPD) and NOAA's National Climatic Data Center (NCDC). OSDPD and NCDC are organizations of NOAA's National Environmental Satellite, Data and Information Service (NESDIS).



Historical Significant Event Imagery:

<http://www5.ncdc.noaa.gov/cgi-bin/hsei/hsei.pl?directive=welcome>

The Historical Significant Event Imagery is a large satellite image archive of significant environmental and meteorological events dating back to 1960. This web-based system includes a multi-parameter search engine capable of locating satellite images based upon users' keyword requirements (i.e., all events, hurricanes, tornado, snow cover, dust storm, smoke, etc.) and a time period range (i.e., entire period of record, day, month, year, etc.), or users can quickly find the most popular images by clicking on "Most Popular" button. For the latest additions users can simply click on the "What's New" button. Also, customers have the option of purchasing selected images online via the NNDC Online Store for high quality prints and mini-posters.

Historical GOES Browse Server (<http://www.ncdc.noaa.gov/servlets/GoesBrowser>)

The Historical GOES Browse Server is another web-based satellite imagery distribution system containing daily GOES images from July 1992 to the present. Users can enter a date and select a satellite (GOES East or West) and channel (i.e. visible, water vapor, longwave ir) for viewing.

The images for the period July 1, 1992 through December 14, 1996 are full earth, whereas the images from December 15, 1996 to present cover the Northern Hemisphere at a higher resolution. The primary purpose of this system is for users to quickly search for particular weather events, such as hurricanes, severe weather, snowstorms, etc., which can be tracked as often as every twelve hours. Users can then order higher spatial and temporal resolution images from NCDC by contacting the Satellite Services Group. Since December 1, 2003 users can obtain GOES data for free from CLASS (see above for details).

Digital Satellite Data and Products

Polar Operational Environmental Satellite (POES):

LEVEL 1b DATA SETS:

AVHRR GAC (Global Area Coverage)	10/78 - Present
AVHRR HRPT/LAC (Local Area Coverage)	04/85 - Present
TOVS MSU (Microwave Sounding Unit)	10/78 - Present
TOVS SSU (Stratospheric Sounding Unit)	10/78 - Present
TOVS HIRS/2 (High Resolution Infrared Sounder)	10/78 - Present
SBUV/2 (Solar Backscatter Ultraviolet/2)	03/85 - Present
AMSU-A/B (Adv'd Microwave Sounding Unit)	10/98 - Present
TOVS HIRS/3 (High Resolution Infrared Sounder)	10/98 - Present

PRODUCTS:

TOVS Sounding Product	01/79 - 05/98
RTOVS Sounding Product	10/97 - 10/01
ATOVS Sounding Product	04/99 - Present
AMSU-B Sounding Product	04/00 - Present
Vegetation Index/AVHRR (3rd Generation)	04/85 - Present
Heat Budget Data--	
Monthly Mean	01/79 - Present
Seasonal	06/74 - Present
Mapped GAC Imagery--	
Polar Stereographic	12/78 - Present
Mercator	06/85 - Present
Sea Surface Temperature Data--	
7 - 8 Day Observation File	12/78 - Present
250 km Monthly Mean Data	01/79 - Present
100 km Analysis (Global Scale)	12/72 - Present
50 km (Regional Scale) and 500 km	03/74 - Present
14 km Analysis (Local-Scale)	01/86 - Present

Geostationary Operational Environmental Satellite (GOES):

Full Disk and Sectors	03/75 - Present
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PRODUCTS:

Sounder Based Products–	02/95 - Present
Vertical Temperature Profiles	
Layer Precipitable Water	
Total Precipitable Water	
Lifted Index	
Geopotential Heights	
Imager Based Products–	02/95 - Present
Cloud Drift Winds	
Water Vapor Winds	
ASOS Supplemental Cloud Height/Amount	
Lifted Index Images	10/99 - Present
Surface Skin Temperature	
Total Precipitable Water	

Defense Meteorological Satellite Program (DMSP):

LEVEL 1b DATASETS:

Special Sensor Microwave/Temperature (SSM/T)	08/87 - Present
Special Sensor Microwave/Imager (SSM/I)	08/87 - 06/06/96
Special Sensor Microwave/Water Vapor (SSM/T2)	06/94 - Present

PRODUCTS:

Temperature, Sensor, and Environmental	
Data Records (TDR,SDR,EDR)	07/87 - Present
SSM/T Sounding Product	01/89 - Present
SSM/I Monthly Gridded Products–	01/87 - 12/94
Precipitation	
Snow Cover/Sea ice	
Total Precipitable Water	
Cloud Liquid Water	
Oceanic Surface Wind Speed	
RTNEPH Layered Cloud Amount,	
Type, Base, Height	01/84 - Present
(Global analysis on 40km grid, every 3 hours)	

International Satellite Cloud Climatology Project (ISCCP):

B1 Radiance Data (10km) from GOES	
VISSR/VAS	07/83 - Present
B1 Radiance Data (10km) from GMS	07/83 - Present
B1 Radiance Data (10km) from METEOSAT	07/83 - Present
B2 Radiance Data (30km) from NOAA Polar	
Orbiters	07/83 - Present

B3 Radiance Data (30km, 3hr) from NOAA Polar Orbiters	07/83 - 06/30/94
B3 Radiance Data (30km, 3hr) from GOES	07/83 - 06/30/94
B3 Radiance Data (30km, 3hr) from METEOSAT	07/83 - 06/94
B3 Radiance Calibration Tables (3hr for each satellite)	07/01/83 - 06/30/94
D1 Global Cloud Data (3hr, 280km grid)	07/01/1983 - 09/2001
D2 Global Cloud Data (monthly, 280km grid)	07/01/1983 - 12/2000

Aerosols:

Optical Thickness (OT) Observations	06/87 - Present
OT Weekly Analyzed Fields	06/87 - Present
OT Monthly Analyzed Fields	06/87 - Present

Non-digital Satellite Products

AVHRR Imagery:

Local Area Coverage (LAC)	04/85 - Present
High Resolution Picture Transmission (HRPT)	04/85 - Present
Global Area Coverage (GAC) by satellite pass	10/78 - Present

GOES Imagery:

Visible and Infrared Hardcopy Imagery	01/79 - Present
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Sea Surface Temperature Charts:

250km Global Monthly Mean Charts	07/81 - Present
50km Regional Charts (selected regions)	04/76 - Present
14km Local Charts (mainly U.S. coastal areas)	01/86 - Present
Gulf Stream Anal. Charts-North/South Panels	10/19/78 - 09/30/95

Aerosol Charts:

100 km Weekly Contour	10/19/78 - Present
Monthly Mean	10/19/78 - Present

Satellite Data Pricing Schedule

Data Type	Fees
PRINTS¹	
Custom Images prints: 8x10 or 11x17 CD-ROM	\$85.00 each (add \$25.00 for each additional channel)
Reproduction of Event Images	\$25.00 each (cost is less if ordered online)

DIGITAL

Please contact the Satellite Services Group for quotes on satellite based digital products. These data and products are now priced on a per unit output volume and can vary widely depending on how the data are extracted and subsetting. Also, check the CLASS web site at www.class.noaa.gov for satellite data and products that are available for free.

¹ quotes on other formats provided. **Custom images** are created using customer defined parameters such as time, location, resolution, and any special enhancements. **Reproduction images** are copies of existing images, usually of a significant event such as a hurricane. To preview a sampling of event images go to the Historical Significant Events Imagery web site at www5.ncdc.noaa.gov/cgi-bin/hsei/hsei.pl?directive=welcome. You may also order these images online to take advantage of discount prices.

Contact information for satellite data and products:

Telephone: 828-271-4850

Facsimile: 828-271-4876

E-mail: ncdc.satorder@noaa.gov

PUBLICATIONS

Following is a brief summary of publications available from the National Climatic Data Center (NCDC). Unless otherwise noted, the summaries are for U.S. locations only. However, there are a number of worldwide summaries/publications. For publications listed as available from NTIS, the phone number is 703-487-4650. Otherwise, please contact NCDC for information on pricing and availability. Some publications are out of print and available on microfiche/microfilm only (* items). Some publications are available online from:

<http://www.ncdc.noaa.gov/oa/climate/climateproducts.html>

National Climatic Data Center
Climate Services Branch
Federal Building
Asheville, NC 28801
Phone: 828-271-4800
Fax: 828-271-4876
Internet: ncdc.info@noaa.gov

HISTORICAL CLIMATOLOGY SERIES

- 1-1 A Long Record of Weather Observations at Cooperstown, NY, 1854-1977
- 1-2 Ninety-One Years of Weather Records at Yellowstone National Pk., WY, 1887-1977
- 1-3 A Long Record of Weather Observations in Southeastern Iowa, 1839-1979
- 2-1 Index of Historical Surface Weather Records, New York
- 2-2 A History of Sunshine Data in the U.S., 1891-1980 *
- 2-3 Inventory of Sources of Long Term Climatic Data
- 3-1 Atlas of Mean Winter Temperature Departures From the Long-Term Mean over the Contiguous U.S., 1895-1983
- 3-2 Atlas of Mo. & Sea. Temp Departures, (Winter), 1895-1983

- 3-3 Atlas of Mo. & Sea. Temp Departures (Spring), 1895-1983
- 3-4 Atlas of Mo. & Sea. Temp Departures (Summer), 1895-1983
- 3-5 Atlas of Mo. & Sea. Temp Departures (Fall), 1895-1983
- 3-6 Atlas of Monthly Palmer Hydrological Drought Indices (1895-1930) for the Contiguous U.S.
- 3-7 Atlas of Monthly Palmer Hydrological Drought Indices (1931-1983) for the Contiguous U.S.
- 3-8 Atlas of Monthly Palmer Moisture Anomaly Indices (1895-1930) for the Contiguous U.S.
- 3-9 Atlas of Monthly Palmer Moisture Anomaly Indices (1931-1984) for the Contiguous U.S.
- 3-10 Atlas of Monthly Palmer Drought Severity Indices (1895-1930) for the Contiguous U.S.
- 3-11 Atlas of Monthly Palmer Drought Severity Indices (1931-1983) for the Contiguous U.S.
- 3-12 Atlas of Monthly and Seasonal Precipitation Departures from Normal (1895-1985) for the Contiguous U.S. - Winter
- 3-13 Atlas of Monthly and Seasonal Precipitation Departures from Normal (1895-1985) for the Contiguous U.S. - Spring
- 3-14 Atlas of Monthly and Seasonal Precipitation Departures from Normal (1895-1985) for the Contiguous U.S. - Summer
- 3-15 Atlas of Monthly and Seasonal Precipitation Departures from Normal (1895-1984) for the Contiguous U.S. - Fall
- 3-16 Probabilities and Precipitation Required to End/Ameliorate Droughts
- 4-1 State, Regional, and National Monthly and Annual Temperatures Weighted by Area, 1971-2000 and earlier periods
- 4-2 State, Regional, and National Monthly and Annual Precipitation Weighted by Area, 1971-2000 and earlier periods
- 4-3 Regional and National Monthly, Seasonal and Annual Temperature Weighted by Area, 1971-2000 and earlier periods

- 4-5 Time Series of Regional Seasonal Averages of Maximum, Minimum, and Average Temperature, and Diurnal Temperature Range Across the United States, 1901-1987
 - 4-7 Climate Variations Bulletin (nationwide climate divisional data) - Preliminary report showing current monthly climate anomalies in a historical perspective using climate databases archived at NCDC. Back issues (monthly since 1989)
 - 5-1 State, Regional, and National Monthly and Seasonal Heating Degree Days Weighted by Population, 1971-2000 and earlier periods
 - 5-2 State, Regional, and National Monthly and Seasonal Cooling Degree Days Weighted by Population, 1971-2000 and earlier periods
 - 5-3 Percent of Normal, State, Regional, and National Monthly and Seasonal Heating Degree Days Weighted by Population, 1931-1983
 - 5-4 Percent of Normal, State, Regional, and National Monthly and Seasonal Cooling Degree Days Weighted by Population, 1931-1982
 - 6-1 Statewide Average Climatic History (1983)
 - 6-2 Tropical Cyclones of the N. Atlantic Ocean, 1871-1992 with annual updates
 - 6-3 Climatic Averages and Extremes for U.S. Cities (274 cities)
 - 6-4 Climates of The World
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MARINE PUBLICATIONS

Climatic Summaries for NDBC Data Buoys (1986) - Seasonal/Annual Persistence of Wind Speed and Wave Height Events

Climatic Summaries for NDBC Buoys and Stations Update 1 (1990) - Seasonal/Annual Persistence of Wind Speed and Wave Height Events

Marine Climatological Summaries, 1961-70 (10 vols) - Approx- 50-75N, 50-170W

Summary of Synoptic Meteorological Observations (SSMO): Most World Coastal Marine Areas, 1850-1979 (97 vols) Great Lake Areas, 1960-73 (4 vols)

U. S. Navy Climatic Study of the Caribbean Sea & Gulf of Mexico:

Volume 1, W. Caribbean Sea & Central American Waters

Volume 2, E. Caribbean Sea

Volume 3, Florida Coastal Waters & SW Atlantic

Volume 4, Gulf of Mexico

U. S. Navy Regional Climatic Studies:

Mediterranean Sea (1987)

Northern California Operating Area (1988)

Southern African Waters (1989)

U.S. Atlantic Coast & Associated Waters (1989)

Mozambique and Adjacent Waters (1989)

Barents Sea and Adjacent Waters (1991)

Sea of Okhotsk and Adjacent Waters (1991)

Greenland, Iceland, UK, & Associated Waters (1992)

Persian Gulf and Northern Arabian Sea (1992)

Red Sea and Adjacent Waters (1993)

Gulf of Aden and Adjacent Waters (1993)

North Sea, Celtic Sea, Irish Sea, Assoc Waters (1994)

Climatic Studies of the Near Coastal Zone:

East Coast of the U.S. (1976)

West Coast of the U.S. (1976)

Persian Gulf and Gulf of Oman (1980)

Malacca and Sunda Straits (1982)

Red Sea South & Gulf of Aden (1982)

Southern Calif. Operating Area (1984)

Climatic Atlas of the Outer Continental Shelf Waters and Coastal Regions of Alaska:

- Vol I, Gulf of Alaska (1988)
- Vol II, Bering Sea (1988)
- Vol III, Chukchi-Beaufort Sea (1988)
- Vol I, Gulf of Alaska (1977)
- Vol II, Bering Sea (1977)
- Vol III, Chukchi-Beaufort Sea (1977)

Climatic Summaries:

- Major Seventh Fleet Ports and Waters (1973)
- Major Indian Ocean Ports and Waters (1974)

Environmental Guides:

- Seven U.S. Ports (1972)
- U.S. Gulf Coast (1972)
- Mona Passage Area (1974)

Environmental Scenarios:

- Northeast Atlantic (1973)
- Northeast Pacific (with errata) (1974)
- Bermuda (1974)

North Atlantic Tropical Cyclones, 1950-1980. *

Mariners Worldwide Climatic Guide to Tropical Storms at Sea - Narrative information and charts showing storm tracks, frequency maps and tropical cyclone roses.

U.S. Navy Hindcast Spectral Ocean Wave Model Climatic Atlas: Historical environmental dataset in the form of a wind and wave climatology. Data in the Atlas were produced by applying the Spectral Ocean Wave Model in hindcast mode to historical wind and pressure fields. Areas: North Atlantic Ocean - North Pacific Ocean - Mediterranean Sea.

Wind and Wave Summaries for Selected U.S. Coast Guard Operating Areas - Describes wind and wave conditions for the U.S. East Coast, Great Lakes and Eastern Pacific. Available from NTIS on microfiche only: Document No. AD-A130 647.

Addendum to Wind and Wave Summaries for Selected U.S. Coast Guard Operating Areas - Contains additional sites for the locations given in the first summary along with U.S. West Coast and Hawaiian locations. Also included is a section on coastal site wind statistics for the U.S. Coast.

Mariners Weather Log: January 1957 to present (published quarterly). Microfiche available 1972 to present from NTIS.

RAINFALL FREQUENCY ATLASES & EVENT STATISTICS

TP-40: Rainfall Frequency Atlas of the U.S. - Weather Bureau Technical Paper No. 40 - Presents 49 U.S. rainfall frequency maps for selected durations from 30 minutes to 24 hours and return periods from 1 to 100 years.

HYDRO-35: Five- to 60-Minute Precipitation Frequency for the Eastern and Central U.S. (Supersedes TP-40 above for the eastern 2/3 of the U.S. for durations of 1 hr. and less.) - Presents 6 U.S. rainfall frequency maps for durations of 5, 15 and 60 minutes at return periods of 2 and 100 years. Equations are given to derive 10- and 30-minute values between 2 and 100 years.

NOAA Atlas 2: Precipitation Frequency Atlas of the Western U.S. (Supersedes TP-40 above for the 11 western states) - Contains maps for the 6- and 24-hour durations for return periods of 2, 5, 10, 25, 50, and 100 years.

Rainfall Event Statistics - Created for stormwater/wastewater discharge applications. Includes rainfall and evaporation data such as wet and dry day counts and storm frequencies, depths, and durations. Available for over 3,200 U.S. cities.

MISCELLANEOUS SUMMARIES (** = Available by subscription)

Local Climatological Data - Monthly climatic data for National Weather Service locations. **

Climatological Data - Monthly climatic data by state for over 8000 stations in the U.S. **

Hourly Precipitation Data - Monthly precipitation data by hour for over 2500 U.S. stations. **

Storm Data - Monthly summary of storms/related damage for the U.S. **

Monthly Climatic Data for the World - Monthly climatic data for worldwide locations. **

Climatic Atlas of the U.S., 1931-60 - Contoured maps of climatic averages for the U.S.

Selected Maps from the Climate Atlas of the Contiguous U.S., 1961-1990 - 20 of the more requested products from the Climate Atlas CD-ROM.

Climatological Summaries, 1951-80 (No. 20) - Climatic summaries by city for the U.S.

Freeze/Frost Data (No. 20 Sup. 1) - Freeze/frost statistics for over 3000 U.S. locations.

Climates of the States (No. 60) - Climatic summaries by state.

Monthly Normals, 1961-90 and 1971-2000 (No. 81):

Monthly Station Normals-Temperature, Precip, & Heating/Cooling Degree Days.

Monthly Precipitation Probabilities, No. 81 Sup. 1.

Annual Degree Days to Selected Bases, No. 81 Sup. 2.

Maps of Normal Temperature, Precipitation, & Degree Days, No. 81 Sup. 3.

Summary of Hourly Observations, 1951-60 (No. 82) - Hourly observational summary by city.

Daily Normals, 1961-90 and 1971-2000 (No. 84) - U.S. daily normals by city.

Divisional Normals/Standard Deviations, 1971-2000 (No. 85) - U.S. normals by climatic division for: Temperature and Precipitation, Heating and Cooling Degree Days.

Climatological Summary of States, 1951-60 (No. 86) - Statewide climatic summaries.

Airport Climatological Summary, 1965-74 (No. 90) - Climatic summaries, U.S. airport locations.

Comparative Climatic Data, 1996 & 2001 edition - Climatological tables for U.S. cities.

SOLAR RADIATION PUBLICATIONS

Mean Daily Solar Radiation, monthly and annual maps.

Annual Average Daily Global Solar Radiation on a South Facing Surface (1952-75).

Input Data for Solar Systems (1941-70) - Contains:

Normal max, min and mean temperatures.

Normal heating and cooling degree days.

Monthly mean daily total solar radiation.

Insolation Data Manual (1952-75) - Contains statistics from "Input Data for Solar Systems" and a global cloudiness index.

Direct Normal Solar Radiation Data Manual (1952-75) - Long term, monthly mean, daily totals for 235 National Weather Service Stations.

Solar Radiation Energy Resource Atlas of the U.S. (1952-75) - Contains maps of monthly and annual values of:

Global average solar radiation.

Global average direct normal solar radiation.

Global average diffuse solar radiation.

Available from NTIS. Microfiche presentations available from NCDC. Include monthly & annual data in microfiche or photocopy form for 237 stations (up to 3 fiche per station).

Solar Radiation and Radiation Balance Data (The World Network) - Contains year-to-year monthly and annual means of global solar radiation, radiation balance and sunshine duration for the periods 1964-1968, 1969-1973, 1974-1979 and 1980-1984. Available for worldwide sites.

Solar Radiation Data, Monthly Summary (1977-1980) - Monthly publication is out of print, but is available on 101 microfiche.

Hourly Solar Radiation (unedited) (January 1981 - October 1985) - A continuation of the above data but editing for quality control was suspended with the publication in December 1980).

Hourly Solar Radiation Data (edited) (January 1988 - Latest available) - Global and direct solar radiation data are collected for the 31 station NOAA Solar Radiation Network.

Selected Climatic Maps of the United States (1931-60) - Contains the following maps:

Mean daily Solar Radiation (January and July).

Mean total hours of sunshine (annual).

Mean percentage of possible sunshine (January, July, annual).

Mean percentage of possible sunshine (monthly and annual maps).

WIND DATA PUBLICATIONS AND TABULATIONS

Wind Energy Resource Atlas (through 1978) - Twelve published volumes of wind energy statistics using data from approximately 975 locations are available from NTIS.

Comparative Climatic Data - Presents separate tables of monthly and annual average wind speed in MPH for about 300 U.S. sites.

Climatic Atlas of the U.S. (1931-60 and 1961-1990) - Presents maps of monthly and annual averages of prevailing direction, mean speed (MPH) and fastest mile of wind.

Local Climatological Data, Annual Summary - Presents tables of monthly and annual average, resultant and fastest mile wind speed for the current year, and monthly and annual mean and fastest mile speed for a long period, usually 15 to 30 years.

Airport Climatological Summaries (1965-74) - Presents monthly and annual tables of mean wind speed (Kts) and prevailing direction plus percent frequency of wind direction vs. wind speed (Kts)

Wind-Ceiling-Visibility Data at Selected Airports (1948-78) - 284 locations available - presents annual-only wind direction vs. wind speed circular graphs and tabulations for six ceiling-visibility classes.

Summary of Hourly Observations (1951-60) - 138 locations available - Presents monthly and annual tables of percent frequency of wind direction and speed (MPH) + percent frequency of hourly wind speed (MPH); and hourly sky cover.

Customized Wind Rose Tabulations - Federal Aviation Administration (FAA) Wind Rose for Airport Design: Wind direction versus wind speed frequency tabulations. The standard tabulation provides an overall summary of 36-point wind quadrant data for combined all-weather conditions. Wind speeds are reported in knots and use 9 standard FAA speed groups plus calm. In general, the most recent 8 years of hourly data will be summarized. Additional tabulations described under "Customized Tabulations" below provide diskette files in the FAA Airport Design software format. NCDC can provide customized 16-point or 36-point wind rose tabulations of monthly, seasonal, and/or annual data; wind units in mph, knots, or meters/sec; and customer-specified a) ceiling-visibility thresholds, b) hours of operations, c) variety of present weather conditions, and d) speed classes (up to 9 classes with flexible ranges).

Extreme Wind Speeds at 129 Stations in the Contiguous U.S. - Presents measured fastest mile wind speed and direction from beginning of record (usually 1941) to 1977 for each year, and computed extreme wind speeds for return periods from 2 years to 1 million years. Tropical storm extreme winds were included for this study, but caution should be used when using this book in hurricane prone areas.

Directional Extreme Wind Speed Data for the Design of Buildings and Other Structures - Presents largest yearly fastest-mile wind speed data corresponding to winds blowing from each

octant at 37 airport stations in the United States.

Historical Extreme Winds in the U.S., Atlantic and Gulf of Mexico - Area covered: 53 coastal locations from Maine to Texas. Tables present measured annual values from beginning of record (varies from 1875 to 1947) to 1979. Maps present computed annual 100-year return period fastest-mile wind speed at 10 and 30 meters above ground level. Tropical storm extreme winds were included in this study.

Historical Extreme Winds in the U.S., Great Lakes and Adjacent Regions - Area covered: 70 locations in 8 Great Lakes states plus Iowa. Tables present measured annual values from beginning of record (varies from 1875 to 1951) to 1979. Maps present computed annual 100-year return period fastest-mile winds at 10 and 30 meter heights above ground level.

Index to Summarized Wind Data (Sep 1977) - Presents samples of 15 different Wind Rose tabulation formats available from the NCDC together with an index arranged alphabetically by state/city and format. Periods of record are listed for each tabulation. Contains no actual or average wind data.

National Wind Data Index--Final Report (Dec 1978) - Presents sample of forms used to record original wind observations and a listing of periods of record available for actual manuscript wind observation data together with a list of anemometer heights and height-change dates. Contains no actual or average wind data.

Wind Energy Resource Information (WERIS) Index - Presents samples of the 19 types of statistical tables and the period of record available for the approximately 975 stations. Contains no actual or average wind data.

WORLDWIDE/FOREIGN PUBLICATIONS

Climates of the World (1969) - Presents average temperature and precipitation data for approximately 800 stations throughout the world. It also includes brief narrative descriptions of the climate of each continent and maps depicting the annual average worldwide distribution of temperature and precipitation.

World Weather Records - This six volume set contains monthly and annual tables of mean temperatures, mean pressures, and total precipitation for most stations throughout the world for which complete data for the ten year period (e.g., 1981-1990) are available. Prior issues back to 1920 are available on microfiche.

Volume 1, North America

Volume 2, Europe

Volume 3, West Indies, South and Central America

Volume 4, Asia

Volume 5, Africa

Volume 6, Islands of the World

Monthly Climatic Data for the World (MCDW) - Issued monthly only, and contains monthly mean values of surface and upper air measurements from a large number of selected stations throughout the world. The surface elements included are pressure, temperature, vapor pressure, precipitation, and percent of long-term averaged sunshine. The upper air data consist of height, temperature, dew point depression, and mean vector wind at standard constant pressure levels.

Miscellaneous Summaries - Weather data recorded by the U.S. Air Force and U.S. Navy weather services stateside and abroad are archived on paper and microfiche at NCDC. Hourly surface data are available from many locations since the 1940s on one form per day. Some autographic charts and radiosonde records are available. Much of this military data are also available in digital form, and can be printed on paper at cost. Summarized data available ranges from 1 sheet monthly averages to several-hundred page 3-hourly summaries. Detailed climatic summaries are also available for many regions of the world.

Worldwide Airfield Summaries - This series of summaries presents monthly and annual climatological information for approximately 4,000 airfields and climatic areas throughout the world. The period of record varies by stations and elements. The data used are prior to 1974. These summaries were prepared by the U.S. Air Force Environmental Technical Applications Center (ETAC) for the U.S. Naval Oceanography Command and are archived on 156 microfiche and on one CD-ROM. Copies of data for individual stations are available on paper or on microfiche.

Upper Air Studies - Joint U.S. Navy/U.S. Air Force Climatic Study of the upper atmosphere. These atlases introduce a new historical gridded upper air dataset. Data in these atlases were produced by summarizing the European Center for Medium-Range Weather Forecasts (ECMWF) 00 & 12Z gridded analyses for 1980-1985. Also available on CD-ROM for period 1980-1991.

Summary of Meteorological Observations-Surface (SMOS) - Monthly and annual summaries (some by 3-hour groups) of weather conditions; precipitation; surface winds; ceiling versus visibility and sky cover; temperature and relative humidity; and pressure for approximately 980 worldwide locations. Data available on paper and on CD-ROM.

Revised Uniform Summary of Surface Weather Observations (RUSSWO)/Surface Observational Climate Summary (SOCS) - Similar summaries to those listed above as 'SMOS' are available for approximately 450 worldwide locations on paper and on CD-ROM. Various periods of record are available.

NCDC Foreign Data Collection - Consists of over 100,000 volumes of publications printed in foreign countries and exchanged with NOAA for US climate publications. The collection contains worldwide average meteorological data on a country-by-country basis. A digital index file is used to locate potentially useful data. Significant large holdings include publications from:

- | | | |
|--------------|----------------|-------------------|
| 1. Argentina | 4. Germany | 7. Poland |
| 2. Australia | 5. Japan | 8. United Kingdom |
| 3. France | 6. Philippines | 9. USSR |

World Data Center-A For Meteorology - Of particular interest to research scientists are the collections of WDC-A for Meteorology, collocated with NCDC. Catalogs have been published and are available in most large research libraries for databases available, which include: GATE, FGGE, MONEX, WAMEX, ALPEX, IFYGL, and STREX.

NOAA Library - Contains an extensive collection of foreign weather data publications.

Visitors are welcome. Address:

NOAA Central Library
2nd Floor, SSMC3
1315 East-West Highway
Silver Spring, MD 20910

GUIDES AND CATALOGS

Selective Guide to Climatic Data Sources (Washington, DC: NOAA, 1988) - Contains brief descriptions of many NCDC domestic, and some NCDC foreign holdings. Available on 7 microfiche, free from NCDC.

Guide to Standard Weather Summaries and Climatic Services (NAVAIR 50-IC-534) (Asheville, NC: NOCD, 1986) - Contains the most complete site inventory available of NCDC foreign (and domestic) summarized unpublished tabulations. Available only on 4 microfiche, free from NCDC.

Catalog of Publications of the World Meteorological Organization (Geneva, Switzerland: WMO, 1983) - For U.S. and Canadian requests, order from:

American Meteorological Society
45 Beacon St.
Boston, MA 02108
Phone: 617-227-2425 (ask for publications)

AFCCC Directory of Climatic Databases (Asheville, NC: AFCCC, 1996) - Descriptions of many Air Force climatic databases available from Federal Climate Complex in Asheville, NC. Free from NCDC.

GLOSSARY OF ACRONYMS

AFWA	Air Force Weather Agency
ASOS	Automated Surface Observing System
AFCCC	Air Force Combat Climatology Center
ECMWF	European Center For Medium-range Weather Forecasts
GTS	Global Telecommunications System
MRF	Medium Range Forecast model
NCEP	National Centers for Environmental Prediction
NGM	Nested Grid Model
NREL	National Renewable Energy Laboratory
NWS	National Weather Service
POR	Period of Record
QC	Quality Control
DSI	Data Set Identifier